



Great Swamp Watershed Association
The Passaic River **WATERKEEPER®** ALLIANCE Affiliate



Across the Watershed

Spring-Summer 2018

Protecting our Waters and our Land for More Than 35 Years

We've Preserved an Additional 20 Acres of Land!

*by Sally Rubin, Executive Director, and
Hazel England, Director of Education and Outreach and Land Steward*

We are excited to share the good news — we've preserved an additional 20 acres of land on Tiger Lily Lane in Harding Township! This plot of land is adjacent to our 53-acre Conservation Management Area (CMA), and increases the area to 73 contiguous acres, open to the public for exploration of the natural habitats and floodplain forest, and to enjoy passive, recreational opportunities such as hiking, nature study or bird watching.

At a ceremony attended by our board and staff members, representatives of various environmental organizations, and GSWA supporters, GSWA Board Chairman, Matt Krauser, officially cut the ribbon at the entrance of the property on November 29th.

We acquired the property through a generous donation on November 9, 2017. This is our first land acquisition since being named as one of only eight accredited land trusts in New Jersey in September of 2017. Sally Rubin, GSWA Executive



Sally and Hazel remove the no trespassing signs.

Director, and Hazel England, GSWA Director of Education and Outreach and Land Steward, having long desired this property, were thrilled that this was GSWA's first acquisition in more than 20 years. This acquisition was vital to connect the 53-acre CMA making it a contiguous 73 acres. This is the first of what we believe will be more ribbon-cutting ceremonies, celebrating additional land acquisitions as we preserve more open space as part of our expanded mission.

(continued on next page)

Land Preservation *(continued from previous page)*

The CMA is fully protected and stewarded by GSWA. It contains critical wetlands, vernal pools, and forested areas. Traversed by a network of trails that are open to the public, and containing over 40 interpretive signs, the CMA is also utilized by staff and local universities as an environmental teaching center where we host more than a dozen school field trip programs serving hundreds of students annually, and where important hands on science college research can take place. We plan to expand and enhance the trail system with the addition of this 20-acre tract and utilize the property to improve flood control and protect native habitat.

The ribbon-cutting event concluded with a brief hike on the newly acquired land, where Hazel outlined some of our initial plans which include the removal of invasive species and creation of additional trails. Ten days after taking official ownership of the property, our enthusiastic volunteers joined us to help ready the CMA trails for the winter and build a connector trail to link our existing trail system to the new area. Visitors can now park at the cul-de-sac and crisscross the entire 73-acre management area without ever leaving the property, which is very exciting!

Speaking of protecting native habitat, GSWA was the recipient of a Natural Resources Conservation Services (NRCS) EQUIP grant last fall. These sought after contracts allow restoration of habitat on past agricultural lands. After working towards a contract for many years, GSWA received the news late in September that funding was in place and a three year \$38,000 restoration contract was ready to sign! Pulling together the necessary documents in a rapid turnaround, GSWA will lead in the

restoration on three lots owned by GSWA and two adjacent parcels owned by Harding Land Trust (HLT) and Harding Township.

Eight acres of woody invasive shrubs and eight acres of herbaceous invasives will be treated as part of the first year of the grant at sites along the Silver Brook on both HLT and GSWA owned properties. After required permits are in place, ex-agricultural drainage ditches around the property will be plugged to allow the site to retain rainfall more easily and to keep run-off from entering the stream too rapidly. The material to create these ditch plugs will be taken from the property, allowing the creation and enhancement of valuable vernal pool habitat at the same time. Along the course of the Silver Brook, woody material such as sections of downed trees will be placed in-stream to encourage the stream to adopt a more meandering pathway, gradually erasing the artificially straightened stream bank sections and creating valuable in-stream habitat for wildlife. This material will also slow the flow of the Silver Brook through the property, again helping with downstream flood control and streambank protection.

Since our CMA property adjoins approximately 25 acres of land preserved by the Harding Land Trust, it makes sense to make improvements to habitat along the entire reach of stream. GSWA volunteers and staff also worked collaboratively with HLT staff in December to delineate trails across the Harding Land Trust lands to connect their Gatehouse property on James Street with the existing trails of the CMA. Consistent signage will allow hikers to walk the entire length of the Silver Brook trail seamlessly, passing from one parcel

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Across the Watershed

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GSWA is a member-supported non-profit organization that has been protecting the waters and the land of the Great Swamp Watershed for more than 35 years.

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Great Music Planned for Great Swamp Spring Music Fest

*Nothing says spring like bright sunshine and your favorite tunes
floating on the air in the great outdoors.*

*That's why we're so excited to announce our inaugural
Great Swamp, Great Music spring festival on **June 10th!***

Sunday afternoon, the historic Polo Field at Hartley Farms in Harding Township will transform into a community-wide celebration of great music, great food and great friends. GSWA will have a variety of live bands providing non-stop music between 1 and 5 p.m. Bring your friends and the whole family out to enjoy the day!

We invite you to bring along your lawn chair or favorite picnic blanket for our tented and open-lawn seating, while you groove to the tunes of four or five local bands. Plan to grab lunch or a snack from a variety of offerings from our vendors. Or spend a lazy afternoon browsing the grounds checking out the unique and interesting merchandise for sale—all vendors are donating a percentage of sales to GSWA! Plenty of parking will be available for all.

This fundraiser replaces GSWA's Home & Garden Tour, with festival proceeds supporting our important work of monitoring and improving local water quality, advocating for environmental policy, preserving and stewarding our local lands, and delivering environmental education to children and adults throughout the community.

Please join us for a great day and to promote a healthier environment today ... for a better future tomorrow.

Buy your tickets today online at GreatSwamp.org or call us at (973) 538-3500.

Don't miss out on this exciting day of music, community, and caring for the environment!

Admission for this event is \$20/Adult advanced sale, \$25/Adult at the gate, and \$10 for High School and College Students with ID. Children under 13 years of age are free!

Event sponsorships available — contact GSWA for details.



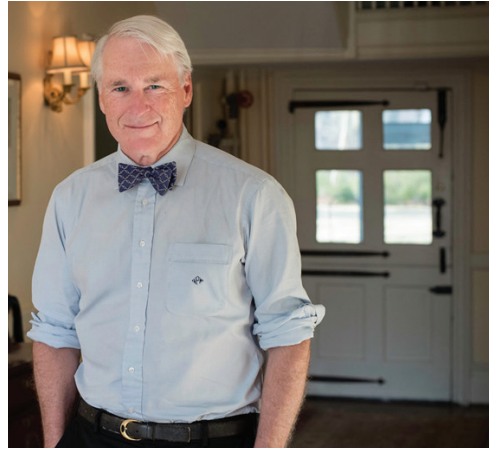
Great Swamp Watershed Association Elects Nicolas Platt as New Board Chairperson

by Sally Rubin, Executive Director

The Great Swamp Watershed Association (GSWA) is thrilled to announce that on January 5, 2018, Nicolas W. Platt, former Harding Township Mayor, was elected as Board Chairperson of the Great Swamp Watershed Association. Nic has served as a GSWA board member since 2016 and has been a long-time supporter of our organization. Nic was the honoree at the 2015 GSWA gala, recognized for his lifelong commitment to conservation and open space advocacy. He also chaired GSWA's well-attended 2017 gala event that recognized former Governor Christine Todd Whitman for her conservation efforts.

Nic's involvement in environmental issues over the last three decades is remarkable. He was at the forefront of recognizing the loss of the dark sky and its effects on health and was involved in Harding Township being the only municipality in New Jersey to embrace 'Dark Sky' protection that is now part of the town's Master Plan. Nic served on the Harding Land Trust and the Environmental Commission for over 10 years, and remains on the Harding Township Committee, to which he was elected in 2009.

Nic commuted to New York City for 33 years working for large multinational corporations. He currently sits on the public board of GAMCO Advisors, is President of the Hartley Dodge Foundation, and was recently named to the Board of the Eisenhower Foundation based in Abilene, Kansas. He has two adult children. Lauren



lives and works in London and Ashley lives and works in New York City.

Platt succeeds Matthew Krauser, Senior Managing Director of Newmark Knight Frank Valuation & Advisory. Matt served as Chairperson for two years and will remain on the Board of Directors.

I can't say enough wonderful things about Matt's leadership these past two years. He has been a great pleasure to work with and has been an inspiration to his fellow board members, to me, and the entire staff. 🌲

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 knecovska@greatswamp.org so you don't miss out on our new monthly e-newsletters.

Upcoming Events

Coffee & Tea Tasting — Clean Water Makes the Best Cup of Coffee or Tea!

Wednesday, March 7, 2018, 5:30–7:30 p.m.

GSWA Headquarters, 568 Tempe Wick Road, Morristown, NJ

Take the sting out of this cold winter and tantalize your taste buds with a variety of delicious, hot coffees and teas. We've teamed up with two local companies to offer you some of their most scrumptious flavors. Black River Roasters has everything from mild to dark and rich, and Adagio Teas offers unique and interesting tea blends. We'll even spike a few for good measure! It's the perfect way to discover your next favorite morning (or anytime) beverage. Appetizers are also on the menu for the evening, so come on out for this winter tasting event.

Did we mention it's free? Here's how it works. If you are not a GSWA member, this event is free! Members can join in on the fun too, for a suggested donation of \$25 — however, if you bring a non-member friend as a guest, it's free to you too! Registration required. Register online at GreatSwamp.org or call (973) 538-3500.

Breakfast Briefing: Exploring NJ's Climate Variability & Change

Tuesday, March 13, 2018, 8–9:30 a.m.

GSWA Headquarters, 568 Tempe Wick Road, Morristown, NJ

Within the past decade, New Jersey has experienced its wettest and warmest years in over a century of observations. Extreme events of late, including Sandy, Irene, and a number of hot summers,

suggest that something is happening to NJ's climate regime. Dr. David Robinson of Rutgers University will explore the physical dimensions of the issue, both short and long term. He will also provide information on how interested individuals can contribute to the monitoring of weather/ climate conditions in the local region. Registration required. Register online at GreatSwamp.org or call (973) 538-3500.

Frog Calling Training

Thursday, March 15, 2018, 6–7:30 p.m.

(Snow date: Thursday, March 22, 2018)

GSWA Headquarters, 568 Tempe Wick Road, Morristown, NJ

Can you tell a spring peeper from a wood frog? What do carpenter frogs sound like, and do they live in your neighborhood? Join Great Swamp Watershed Association and FrogWatch partners Eric Jackson and Tedor Whitman from Cora Hartshorn Arboretum for this hands-on training session to learn your frogs and even become an official FrogWatch volunteer! FrogWatch is a citizen science program using volunteer observations to establish long-term and large-scale data on amphibian populations. Learn how to recognize different species of frogs and toads from their appearances and calls and how to record your observations into the database. We will help you find locations to monitor, and you will be frog counting in no time! This program is offered in collaboration with GSWA and the Cora Hartshorn Arboretum. Registration

required. Register online at GreatSwamp.org or call (973) 538-3500.

St. Paddy's Day Spring into Green Hike
Saturday, March 17, 2018, 10 a.m.—noon

Watchung Reservation, 452 New Providence Road, Mountainside, NJ

It's St. Patrick's Day and Spring is just three days away! Put some hiking shoes on your feet, gather up your family, and join us on our "Downstream Adventures" hiking series at the Watchung Reservation. There's lots to see and explore as we hike alongside the Blue Brook. We will take in the scenic gorges and the remnants of the deserted village of Feltsville. This hike wouldn't be complete without taking a moment to marvel at the beauty of Lake Surprise. Registration required. Register online at GreatSwamp.org or call (973) 538-3500.

Vernal Pool Exploration Hike
Thursday, March 29, 2018, 7–9 p.m.

*GSWA Conservation Management Area,
1 Tiger Lily Lane, Harding Township, NJ*

With temperatures rising, the forest floor will be hopping with new life as frogs and other amphibians crowd into shallow puddles of water to breed and lay their eggs. These puddles, better known as vernal pools, provide a perfect opportunity to learn more

about Mother Nature here in New Jersey. But hurry! They disappear quickly.

Great Swamp Watershed Association's annual vernal pool exploration provides a fun, outdoor learning experience for kids and adults alike. Discover the differences between a spring peeper, a chorus frog, and a wood frog. Find out how far an endangered spotted salamander will walk to find a mating pool. And, learn how much everything we have come to appreciate about the springtime depends on a few unassuming puddles of water on the forest floor. Warm clothing and waterproof footwear — especially hiking boots — are very strongly recommended for this hike. Registration required. Register online at GreatSwamp.org or call (973) 538-3500.



Spring Peeper
Credit: FynKynd Photography

Build Your Own Rain Barrel Workshop —
When it Pours, it Stores
Wednesday, April 4, 2018, 5:30–7:30 p.m.

*GSWA Headquarters, 568 Tempe Wick Road,
Morristown, NJ*

April showers bring rain barrels! Capture the rainwater that runs through your home's downspout and you'll always have 55 gallons of free water available for things like watering your garden and washing your car. When the power goes out, it's an excellent backup water source for flushing. Using a recycled, food-

(more events on next page)

Upcoming Events *(continued from previous page)*

grade barrel and a spigot adapter kit, GSWA and Green Mojo Eco Consulting help you construct your very own rain barrel. Pricing: \$90 to assemble, \$110 to purchase outright, free to observe the workshop. You will take your new rain barrel home with you, and it'll be ready for hookup to your home's downspout immediately! Registration required. This workshop fills up fast. Register online at GreatSwamp.org or call (973) 538-3500.

Stream Assessment Training
Saturday, April 14, 2018, 9 a.m.—noon
Summit Public Library, 75 Maple Street, Summit, NJ

If you are interested in becoming a stream monitoring volunteer or just learning more about stream health, this is the training for you! An indoor classroom session helps you learn how to conduct visual and biological stream assessments and recognize environmental factors that may impact stream health. An outdoor session helps you practice your new-found skills at a local stream site. Afterwards, you will be a fully trained stream assessment volunteer and ready to conduct an assessment!

This training will be conducted in conjunction with the AmeriCorps New Jersey Watershed Ambassador Program. Registration required. Register online at GreatSwamp.org or call (973) 538-3500.

Evening Briefing: Economic and Social Vulnerability to Climate Change
Tuesday, April 17, 2018, 7–9 p.m.
GSWA Headquarters, 568 Tempe Wick Road, Morristown, NJ

Award-winning author, Dr. Robin Leichenko, examines the economic and social impacts of climate change in New

Jersey. We will learn about how climate change is affecting economic assets, activities, and vulnerable communities and populations. Dr. Leichenko will also describe the on-going efforts at Rutgers University to help make the region more climate resilient. Registration required. Register online at GreatSwamp.org or call (973) 538-3500.

Invasive Species Identification Hike
Thursday, April 26, 2018, 6–8 p.m.

GSWA Conservation Management Area, 1 Tiger Lily Lane, Harding Township, NJ

What makes a weed a weed? How can you tell your oriental bittersweet from your Japanese barberry and why should you care that you can? Invasive plants are spreading in our forests and open spaces and harm the environment as they reduce biodiversity and resources for native wildlife. New Jersey spends millions in labor and resources to remove invasives each year. Join us on a hike through the CMA as we learn to identify New Jersey's top ten least wanted, as well as the native species we hope to see! By the end of our hike, you will be able to identify all of the bad guys — and hopefully understand why honeysuckle isn't so sweet and how multiflora rose can be such a thorn in the side... literally! Registration required. Register online at GreatSwamp.org, or call (973) 538-3500.

Paper-Making with Non-Native Plants
Tuesday May 1, 2018, 5–7 p.m.
GSWA Headquarters, 568 Tempe Wick Road, Morristown, NJ

Traditional paper comes at the cost of felling millions of trees each year, and hardly any of this paper is recycled to be reused. Want to try an alternative solution? Join us

for this engaging, hands-on workshop where we will teach you how to make basic paper out of plant pulp sourced from common backyard invasive plants. If you happen to have some extra garlic mustard or phragmites growing in the backyard, now you'll know how to repurpose these invasives into decorative paper, and let the trees breathe a sigh of relief! Registration required. Register online at GreatSwamp.org, or call (973) 538-3500.

Evening Briefing: 2017 Water Quality Report Card Readout
Tuesday, May 22, 2018, 7-8:30 p.m.

Morris County Library, 30 East Hanover Avenue, Whippany, NJ

Come out and learn about the water quality along your stretch of the Passaic River. Great Swamp Watershed Association will present the 2017 Water Quality Report Card with up-to-date data and information on all five Great Swamp Watershed streams and the downstream Passaic, through Summit. Sandra LaVigne, Director of Water Quality, will present a brief talk on the status of our streams throughout the region, discussing highlights and issues as well as tips on how you can get involved in protecting our waters. Registration required. Register online at GreatSwamp.org, or call (973) 538-3500.

Owl Prowl Night Hike
Wednesday, May 30, 2018, 7:30-9:30 p.m.

Great Swamp National Wildlife Refuge, Meyersville Road, New Vernon, NJ

Explore New Jersey's forests at dusk and you just might find yourself in the middle of an interrogation! The barred owl sounds like a very inquisitive bird, questioning,

"Who?!! Who cooks for you?" But, in fact, it's just trying to protect its turf. Want to learn more about New Jersey's owls and other noise-making denizens of the night? Then you won't want to miss this late spring hike with GSWA's Hazel England and conservation biologist Dr. Emile DeVito. The Great Swamp National Wildlife Refuge with wetland forests and swamps is prime owl-spotting habitat and a perfect spot for Dr. DeVito to demonstrate his owl-calling expertise. With a little luck, you might just hear some of these stealthy night flyers as they move in to investigate the mysterious whoos in their neighborhood. Registration required. Register online at GreatSwamp.org, or call (973) 538-3500.

1st Annual Live Music Festival – Great Swamp, Great Music!
Sunday, June 10, 2018, 1-5 p.m.

Hartley Farms Polo Field, Harding Township, NJ

Get ready to clap your hands and tap your feet! This family-friendly event is fun for all ages. Bring your lawn chairs or spread out a blanket, and spend the afternoon grooving to the sounds of four great local bands. Grab a bite to eat from a variety of food vendors or browse the grounds and check out the unique and interesting merchandise for sale. Save the date — more information and ticket purchase available on our website at GreatSwamp.org. 🌲

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and join the cause on**

facebook

Spring into Watershed-Friendly Lawncare Practices!

by Dan Ross, Education Associate

At long last, spring is finally here! The ice and snow have all melted away (or at least hopefully, by the time you're reading this article!), and you can finally gaze out across your beautiful... dead, brown, grass? Before you head over to the garden shed and reach for the synthetic fertilizer, here are a few tips to heed, and some easy suggestions on how you can make the move towards a more watershed friendly yard.

Those in the know will tell you that the best time to fertilize a lawn is actually in the late summer to early fall. This practice helps to develop more robust root systems and encourages your lawn's rhizome network to grow dense, which in turn supports a healthier lawn come springtime. However, applying some Nitrogen based fertilizer in the spring can help to encourage early season growth and promote "green up." Which brings me to my next point of advice, always be in the habit of checking the label on your fertilizer and closely follow the instructions on the bag!

All fertilizers come with three numbers on the bag which represent a grade, or composition analysis, which alerts homeowners to the relative amounts of Nitrogen, Phosphorous and Potash that are present in their bag. While these nutrients are necessary for plant growth in small amounts, overuse or applying them at the wrong time, can lead to excessive aquatic plant growth when fertilizers run off the land and reach our waterways. For this reason, back in

2013, the NJDEP initiated one of the most stringent fertilizer laws in all of the country!

Phase III of the New Jersey Fertilizer Law requires that "all fertilizer products sold in New Jersey for turf must contain at least 20 percent slow-release nitrogen and zero percent phosphorus unless a soil test demonstrates a need for phosphorus to be added." A simple soil test will alert you to any nutrient deficiencies your yard might have, and then you can be confident that you are applying the right balance of soil amendments and aren't needlessly applying chemicals.

To be certain that you are in compliance with this law, avoid purchasing any outdated fertilizers that still contain Phosphorous, and properly dispose of any older fertilizer you may still have at home in the garden shed by bringing it to your local hazardous waste recycling facility. When applying fertilizer, always check the weather forecast as well to avoid applying it before heavy rains are predicted, as this will help minimize the chances of runoff.

Another great way to ensure that your lawn is getting all of the nutrients it requires, while saving yourself a backache, is to avoid the urge to bag grass clippings and haul them away from your lawn. Instead, consider mulching the fine clippings back into the grass, which will reduce the amount of chemicals you need to apply, and save you time when you are mowing the lawn this summer! You can get back inside sooner

(continued on opposite page)

Test the Tap! Discount Home Water Testing This March

GSWA is happy to once again offer local residents the opportunity to test the water in their homes. We look forward to once again teaming up with Kemmerer Library in Harding Township as well as offering new locations in our new expanded downstream areas where residents can pick up information and then drop off samples on collection days. Well testing

packages include measures of coliform bacteria, nitrates, manganese, and lead while public water supply packages include coliform bacteria, lead and pH. Check out our website, GreatSwamp.org, for more information and to find a location near you. Or email Sandra LaVigne, Director of Water Quality, at sandral@GreatSwamp.org. 🌿

Lawncare *(continued from opposite page)*

to watch the end of the ballgame, while knowing you are being green!

Even if you aren't all that concerned with having the greenest yard on the block, there are still more ways that you can be more watershed friendly through water conservation practices such as only watering your lawn during the morning and late afternoon hours, while avoiding doing so during the hottest parts of the day. If you have water sprinklers that are set to automatically water your lawn, always ensure that they are properly programmed and look for any leaks or broken sprinkler heads that might be needlessly watering the sidewalk. There are now even "smart" irrigation control systems available that use local weather data to determine if the sprinkler should activate or not!

Indeed, a thriving emerald green lawn may be the end goal for many, but it can certainly be achieved while adhering to the best available watershed friendly practices.

Of course, you may also choose to give up on keeping up with your neighbor's lawn altogether, and instead allow part of your lawn to return to meadow, or grassland habitat. Always check with your town's local ordinances first, but allowing your grass to revert to wildlife habitat is a great way to contribute to the ecosystem all while allowing you to forget about all the pesky requirements of owning a lawn!

For additional tips on how to be more watershed friendly around the home, check out the Watershed Friendly Living section of our website, GreatSwamp.org/watershed-friendly-living/ or watch for our Watershed friendly "Tip of the Month" in our eNews blasts! 🌿



Meet our Macros: Dragonfly Nymphs

by Kristina Necovska, Membership Associate

This is an article about a small crisis with large consequences. It's about, brace yourself – bugs, who sadly occupy the “annoying and offensive” part of our brains instead of “wonderous and necessary”. Let's change that, shall we?

Macroinvertebrate sampling is a key component of our water quality monitoring and educational programming. Yet, many people do not understand the value of macro-invertebrates. So, what is a “macro”? (That's ok, we'll give you a pass for not knowing.) Macro means large and invertebrate means without a spine. Macroinvertebrate refers to an insect we can see without the use of a microscope, who lives in freshwater, and is our fastest and most accurate biological indicator.

The term “biological indicator” applies to any animal that is first to indicate (to humans of course) the effects of environmental

disruption – disruption in this sense is usually chemical, but it can also mean physical effects (such as erosion or sedimentation in our streams). The term ‘biological indicator’ gained traction in the mid 1990s when Minnesota schoolchildren discovered an environmental crisis in their own back yards – 50% of the frogs they witnessed were horribly disfigured and mutated. Since that time, frogs became the quintessential ‘biological indicator’. Yet when sensitive vertebrates like amphibians are showing the effects of disruption, environmental pollution is already egregious and a potential risk to human health. Insects are widely studied in aquatic ecology because their life cycle is faster and their mere presence or absence is an excellent, low-cost indicator of water quality. It gives us a fighting chance to reverse ill effects before they get out-of-hand.

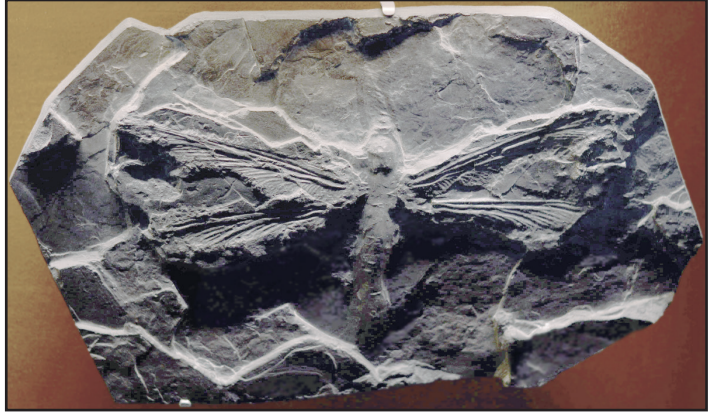
When we look at the diversity of macros in an aquatic eco-system, we're looking for factors to compare to their stress tolerance. Finding a low diversity of stress tolerant insects immediately tells us that our stream is unhealthy. Macros range from stress tolerant (seldom found in clean water and can withstand almost anything - leeches, for example) to very sensitive (found only in pristine waters), which brings us to the dragonflies.

Odonates: Ancient aliens

Odonates — dragonflies and damselflies — are alluring, large, brightly colored insects with an incredible natural history. I won't go



Blue Darner, Kristina Necovska



into all the fascinating details for such a short article, but one notable fact is that they possess arguably the most sophisticated eyes in the natural world. They surely experience a spectrum of sights that we could barely comprehend. The largest insect to ever exist on this planet was a dragonfly with a 27 inch wingspan, existing virtually unchanged since the Permian period 290 million years ago. Odonates display dazzling metallic colors and many interesting behaviors in their life history and many species produce just one brood per year. Remember this fact, because it is important.

While it isn't fair to ascribe a hierarchy of usefulness to wildlife, they exist in their own ecological niche and each is vital in its own way. But odonates perform an incredibly vital service to us. They are voracious apex predators even in their nymph stage and their favorite prey is one of our most annoying enemies; mosquitoes, black flies, and other biting insects.

In that sense, dragonfly nymphs are very sensitive to changes in their environment. Finding an odonate nymph while sampling is a sure sign that the stream is pristine. The Brook Snaketail, a native dragonfly found in Morris County, is so sensitive that even minor increases in the silt or mud in their streams can alter dissolved oxygen levels enough to kill their larvae.

The grim reality is that in Morris County 48% of dragonfly species — 60 out of 125 species, functionally half, are threatened. This trend is not isolated to Morris County, however. All of New Jersey's odonates have been facing a population decline due to habitat destruction and development. Even minute changes in their environments can wipe out entire generations (they only breed once per year, remember?) so their conservation is especially pressing. Another key issue facing odonates is that while there are some species that will migrate to new locations, many do not. They show habitat fidelity and will not migrate away from a site, even if it becomes polluted. Many of our rarer species, like the Morris County native Tiger Spiketail (New Jersey's only black and yellow striped dragonfly) is loyal only to cold oxygen-rich streams in shady forested habitats.

Their decline in our state and threatened status in Morris County means that municipalities face potential larger costs for mosquito spraying, declining eco-tourism and an increased likelihood of having biting insect borne diseases transmitted to human populations. Similarly, many aquatic and migratory birds rely on these large insects and their larvae.

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Vernal Reflections

by Dan Ross, Education Associate

We have all undoubtedly heard the whimsical notion that as the snow begins to recede, and winter reluctantly releases its icy grip on the landscape, spring greets us with all the ferocity and force of the lion, before eventually slipping into the peaceful slumber of the gentle lamb. Perhaps we should not be surprised when light snow gracefully adorns our walkways and viewscapes on early spring mornings, and yet we curse the gray sky above none the less! Nor should we be so quickly lulled into the false promises of the occasional warm and sunny afternoon, for this is a time of unparalleled change and unpredictability, the conclusion to the chapter of a story we have grown weary of accommodating.

Indeed, spring has always held a special place in my heart as it offers all life a new beginning, a departure from the bleak and desolate grasp of winter. All around us, life resumes its frantic pace, almost without skipping a beat. Diminutive spring peepers announce the changing of the seasons in a perfectly choreographed cacophony of sounds, quite familiar to all those who are attuned to its signal. They will soon be joined by wood frogs, chorus frogs, and eventually the deep noisy baritone of the bull frog. On the first warm, rainy, spring evening, entire cohorts of these vernal pond communities will make the short trek, sometimes across bustling roadways, to return to their breeding grounds.

Tired golden-brown remnants of late season goldenrod and spent milkweed pods

soon yield way to vibrant green shoots and rosettes, eager to resume the cycle of life anew. Almost before the ice has retreated from their branches, crimson red buds appear on maple trees throughout the valleys. All along the forest floors, ephemeral wildflowers quickly spring to action, taking full advantage of this fleeting window in which competition for sunlight and other resources is not as fierce. The celebration of nature is in full swing, and the cold long winter nights are by now a distant memory.

Almost in the blink of an eye, our winter resident Snowy Owls, Dark-Eyed Juncos, and Snow Geese have once again returned to their Arctic residences and we are instead enthralled by the return of warblers galore! Bright vibrant flashes of color high up in the canopy signal their much-anticipated return, and enthusiasts everywhere grab for their binoculars and hit their favorite open spaces and preserves. All the same, our feathered friends seem completely disinterested in the increased attention as they flit about from branch to branch in search of potential mates and establish arboreal territories.



Frequent spring storms shower the terrain with life-sustaining nourishment, as rivulets of snow melt descend from their lofty frozen summits to join the passage through raging tributaries and eventually cascade into mighty rivers on their journey out to sea. Yet these very waters also carry along with them the vestiges of man's contribution to the land. Fine sediments are picked up along the way where the soil has become exposed. Carelessly discarded litter is flushed from its temporary haunts below the snowpack, and the very road salt which has kept our roadways safe and passable is washed into our freshwater bodies irreparably altering its very chemistry.

Our constant drive for emerald green lawns manifests itself in the consequence of excess fertilizers joining in on this journey as well. In fact, it turns out there is no shortage of ways in which harmful contaminants can find their way onto our landscapes and into our waterways during the tumultuous springtime hustle and bustle. Yet my point

is not to chastise or to disparage, but rather to optimistically point out the seemingly obvious, change is inevitable. In the nature of man, and in that of the natural world around us, life continues unabated.

There is however, the ever-present opportunity for us to invest in efforts to be the change that we hope to see, and there is no better time than today to get involved! I ask you all to draw inspiration from the changing of the seasons around us and join us to protect our waterways, explore our open spaces, and learn more about actions we can all take to live more sustainably through watershed friendly practices at home. Come along on the journey as we investigate vernal ponds, search for spring ephemerals, and find new and creative ways to manage invasive plants. We hope you will join us this spring as we celebrate life eternal and continue along our journey to protect that which we hold dear. For as the proverb goes “no matter how long the winter, spring is sure to follow!” 🌱

Macros *(continued from page 13)*

How do we save them? We save them by saving the places they require to survive — intact undeveloped forests with clean streams.

If you're interested in meeting our macros in person, contact our Director of Water Quality, Sandra LaVigne, (sandral@GreatSwamp.org) to become a volunteer stream team member.

Sources: NJOdes.org, Barlow, Allen E. Field Guide to Dragonflies and Damselflies of New Jersey. NJ Dept of Environmental Protection , 2009, Voshell, Jr., Reese J., A Guide to Common Freshwater Invertebrates of North America, Dept of Entomology, Virginia Tech, 2011. 🌱

The Fight Against Stormwater Runoff— What is Green Infrastructure and Why is It so Important for the Future?

by Adam Palmer, Education Associate

Have you ever stood outside during a strong rainstorm? Felt the hundreds of tiny cold rain drops hit your face? Maybe you've held your tongue out to catch a snowflake during a flurry, or jumped into a pile of powdery, crunchy snow? All of these things are the marvelous products of precipitation, the stage in the water cycle where water condenses in the clouds and falls back down to the earth below. But what happens to all that water once it has hit the ground?

In a perfect world, the rain would fall upon a porous surface where it could be absorbed, filtered and reused by the roots of plants. It can also be held in the soil or assimilated into the ground water table. Today, however, with urbanization and development, we have a number of human-created barriers that stop water from infiltrating into the ground, creating problems like flooding and non-point pollution. This large influx of water remaining on the surface after a storm, more commonly known as stormwater or stormwater runoff, can appear in an instant and cause many problems if not properly planned for and managed. Stormwater runoff is created by water from rain and snow-melt events flowing over land or impervious surfaces, such as paved streets, parking lots and building rooftops. This runoff then picks up pollutants like trash, chemicals, oils, dirt and sediment that can harm the health of our rivers, streams, lakes and coastal waters. Municipal stormwater sewer systems are traditionally what we would

call "Gray Infrastructure" in reference to the impervious gray concrete that they are usually constructed with. Cities with older sewer and municipal stormwater systems also face the problem of Combined Sewage Outfalls (CSO). CSOs collect rainwater runoff as well as domestic sewage in the same pipes, and like their name implies, the stormwater combines with the sewage. Under normal conditions this combined stormwater and sewage is delivered to a water treatment plant. However, these systems are not built to handle the high volume of water that can accumulate during a heavy rainstorm. This result is a portion of the residual waste, garbage and runoff being dumped untreated into a water source where the overflow outfall empties. In order to avoid the pollution these CSOs cause, townships and municipalities need to consider the best way to control and manage their stormwater.

The benefits of an effective stormwater runoff management solution are twofold. They help us conserve valuable water resources by protecting wetland and aquatic ecosystems as well as protecting residents from flooding and polluted water. One of the best solutions to combat stormwater runoff is Green Infrastructure (GI). Green Infrastructure is an approach that incorporates, protects or mimics the processes of the natural water cycle to effectively handle stormwater. There are a number of Green Infrastructure installations that can reduce the volume of water entering

the wastewater system and problems of flooding and pollution and which many people can install at their residences or in their neighborhood. Rain barrels are perhaps the easiest and quickest Green Infrastructure installation and something many people can do by themselves. Connected to the rainspout, rain barrels collect stormwater runoff from the rooftops of buildings, slowing its release onto the ground and impervious surfaces, preventing it from adding more volume to the system during peak flow (the time period during a storm when rainwater is at the highest volume and movement speed). Half an inch of rain on a 1000 square foot roof will produce 300 gallons of water, which, depending on the size of the barrel, is 300 gallons of water not being dumped into CSOs. Now if fifty people from the neighborhood all install rain barrels, they are preventing 15,000 gallons from entering the system and so the effect is magnified. Rain gardens, cisterns and rain barrels are all just some examples of Green Infrastructure that have been proven to help with stormwater management.

Green Infrastructure installations as effective methods of stormwater management are gaining momentum around the world. Here's a quick look at some GI projects that have been installed with success in New Jersey recently.

Newark has many opportunities for Green Infrastructure installations to help combat the flooding and CSO issues that many residents in the city face on a regular

basis. A project headed by the City of Newark and Rutgers Cooperative Extension Water Resources Program will install GI in a traffic triangle on the intersection of Clinton and Badger Avenue. Once an impervious and barren concrete slab, through GI the triangle is transformed into helpful and aesthetically pleasing rain gardens. Rain gardens work by allowing storm water to slowly be absorbed back into the ground, where the sediment and roots of native vegetation help hold and filter the stormwater before releasing it to evaporation or slowly making its way to streams. This rain garden is complemented by pervious pavement, which allows water to seep through, and curb cuts which allow runoff trapped by the road curb to enter the GI space. By allowing this water to enter the ground freely, issues like flooding and CSO contamination events are greatly reduced. It is estimated that almost 220,000 gallons of rainwater will be captured each year by the system (<http://www.water.rutgers.edu/Projects/Newark/Newark.html>).

In 2012, Chatham Borough, in coordination with volunteers and Green Path Landcare, planted a rain garden next to the Memorial Park Pool. It is estimated that this rain garden manages 25,000 gallons of rainwater per year running off from the roof, pool deck and pump house of the Memorial Pool. All of this water would be picking up pollutants, chemicals and bacteria and empty back out into the Passaic River. Instead, it is now given a chance to recharge the

(continued on page 19)

Homelessness and Water Quality

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

What do homelessness and social justice issues have to do with improving water quality, storm-water management and improving public access and recreation opportunities along the Passaic River? The answer is that these seemingly disconnected issues are in fact intertwined much more closely than you would think!

Annual surveys conducted in January each year estimate the number of homeless in New Jersey at around 8,500 individuals, of which around 1,400 individuals are considered as living rough — in woods, in industrial abandoned areas and along river banks — locations out of sight where they can make an undisturbed shelter, and avoid the harassment that often accompanies detection. While the more affluent rural and suburban communities at the headwaters of the Passaic River do not encounter homelessness as an issue, or even need to consider it in thinking of water quality issues, the more urbanized central and lower sections of the Passaic River in Passaic and Essex Counties deal with significant homeless populations. Estimates put the number of homeless living in Essex County at around 430, with the bulk of those individuals living along the margins in Newark — hidden from the many working commuters who pass by every day. A view from the water shows a different story though, and the blue tarps of temporary shelters can easily be spotted, sprouting within the vegetation on the steep banks of the river right in the heart of

downtown Newark adjacent to Raymond Boulevard. People living in these areas have limited access to bathrooms, to clean water, or to refuse disposal, and so in living their daily lives contribute unknowingly directly to non-point source pollution.

Any future restoration efforts along the banks of the Passaic River in communities such as Newark or Paterson must first account for this homeless population as riverfront park acquisitions, restorations and refurbishment take hold. There are great plans afoot in Newark to improve the population's access to the river — the seven-acre Riverfront Park being a great start to this effort. While the establishment of Riverfront Park creates an invaluable space for people to connect to the river to walk, to enjoy the view, or even to access the river for water quality sampling programs such as those GSWA staff have conducted with Chatham High School and College of St. Elizabeth students using the fabulous waterfront dock, the reality is that the creation of this space has caused confrontation with existing homeless populations. The needs of the homeless populations living for long periods in these riverfront areas must be addressed as part of any comprehensive riverfront resurgence — where will they go when moved from areas to be redeveloped? Economic and social justice issues are therefore deeply connected to environmental justice issues. This need to address issues holistically was brought home at a recent meeting of the Lower Passaic River Urban Waters Federal Partnership. At this roundtable conference meeting to



Jackson St. Bridge in Newark, photo taken by the photographer from The New York Times in the summer of 2013

and Army Corps of Engineers' scientists, nonprofit organizations such as the Hackensack Riverkeeper, New York New Jersey Baykeeper and Great Swamp Watershed Association. All had the shared vision to im-

continue to plan education, restoration and engage audiences, organizations addressing homelessness, and those serving on local area housing authorities, sat alongside EPA

prove the waterfront, protect populations from flooding, and improve the quality of the water in the river, and improve the quality of life for all. 🌲

Stormwater Runoff *(continued from page 17)*

Buried Valley Aquifer from which Chatham Borough gets its drinking water (http://www.nj.com/independentpress/index.ssf/2012/05/chatham_boro_installs_rain_gar.html).

In Paterson, GSWA partnered with local schools to install rain gardens on previously impervious ground cover around the school grounds. Working closely with the students to plan, design and understand the benefits of rain gardens, the program also functioned as a learning opportunity. It is estimated that these garden installations will absorb approximately 500,000 gallons of rainwater each year, keeping it out of the CSO system. In this case, GI offers a more sustainable and economic option for stormwater management, while also providing an educational environment for students to learn about the water cycle and their own city's water system — see the article elsewhere in the newsletter for more details and information on this project!

Green Infrastructure projects will play a major role in the future, as GI sites also often double as recreation areas or amenities. People are much more likely to go meet up and enjoy the living nature aspects of open green space than a concrete retention basin. While many of the GI projects currently being planned or installed will not make massive or drastic changes, they serve as demonstration projects and they may cumulatively begin to address the stormwater runoff challenges our developed communities face. The gallons captured and stored by these installations, additively can reduce runoff in one area, which might stop flooding in another, all taking pressure off overworked sewer and stormwater systems. The important thing is that we learn from the past and that moving forward we continue to use the most sustainable and logical practices to address our growing stormwater and runoff issues. 🌲

With Sincerest Thanks to The David and Carol Lackland Family Foundation

by Rick Porter, Director of Institutional Relations

Having grown up and lived most of her life in Somerset and Union Counties in New Jersey, Jennifer Lackland has never really been far away from the Great Swamp National Wildlife Refuge.

The Refuge is a place with which she is intimately familiar, having spent countless hours there as a child and an adult walking the trails, exploring wetland habitats, and “being one” with the birds and forest animals. It is a place of peace and serenity for her!


Jennifer’s passion for nature, and the Great Swamp, led her to attending our annual Gala Celebration in 2012. At the gala, she met many of our loyal supporters and learned how our environmental education and water quality monitoring programs impact the health of the environment, and quality of people’s lives.

Knowing how important our work was, Jennifer soon became a member of GSWA. In 2015, at the invitation of Sally Rubin, our Executive Director, they met for lunch and spent hours talking about mutual interests connected to our mission; from the importance of getting children

back into nature so they eventually learn to protect it, to the needs for more open space preservation. Jennifer knew then that she wanted to be more involved, and provide as much support as possible.

After meeting with her parents, David and Carol, who have sadly both passed away, Jennifer committed to the first major gift from the family. A year later, after meeting with Sally again and reviewing the impact their gift had on our ability to expand and improve programs, the David and Carol Lackland Family Foundation made a three-year pledge gift to GSWA that was truly transformational.


The family’s support allowed Great Swamp Watershed Association to fulfill many of the initial objectives of the strategic mission initiative we undertook in mid-2016 to incrementally expand our programs and services to targeted communities on the Passaic River, from source to sea.

We are sincerely grateful for the generous support of Jennifer and her family, and we look forward to a long relationship with the David and Carol Lackland Family Foundation. 

We’ve Preserved *(continued from page 2)*

of preserved land to another while on the same trail system. Together, this provides a combined 100+ acres available to the public for hiking, birding, exploration, and more.

We hope you will join us at one of our many scheduled programs at the expanded property over the coming months, or take a hike there

any time, to enjoy this expanding conservation gem. Let us know too if you, or your company, would like to help us with ongoing stewardship or a corporate workday at the site. We would certainly love the help to restore this new section of the property to the same high standards as the surrounding acreage. 

by Val Thorpe, Director of Communications and Membership

As the old Haitian proverb goes, “Many hands make the load lighter.” This is never more apparent than when you’ve got a big job in front of you, and someone shows up to lend a hand. Volunteer opportunities come in all different shapes and sizes (figuratively speaking.) Volunteers offer vital help for communities, organizations, people in need, and more. And there is no shortage of places where you could jump in and make a difference. Tasks could range from administrative assistance to hands-on work in the field, and everything in between.

Non-profits tend to operate on a shoe-string budget. Very often, staff members wear many hats to accomplish their lofty goals. One thing that is imperative to the success of a non-profit is a large pool of motivated volunteers. Volunteers really save the day, and even the smallest of tasks can make a big difference.

I’m not sure I have time to volunteer

We all lead busy lives. Sometimes we wonder how we will manage to get it all done. There are the “must-dos,” the “should-

dos,” and the “want-to-dos.” Years ago, I was flying on business and had the good fortune of sitting next to an intelligent and motivating woman. We chatted about our families, our jobs, and life’s challenges. (It was a long flight.) When I mentioned something I wished I could do, she politely posed the question, “If you want to do it, why don’t you just do it?” I explained to her that my schedule was just too hectic to squeeze that into my day. Her response was, “We are all given the same 24 hours in a day. Why do you suppose it is that some people are able to accomplish so much more than others in that same 24-hour period?” That question has lingered in my mind since that day. We make the time for so many things in our day-to-day lives. It caused me to reconsider how efficiently I was using my time, and what I could omit or streamline to make way for other things I’d like to do.

What are the benefits of volunteering?

People volunteer for a myriad of reasons. Some may volunteer because they see a need. Others may be tapped on the shoulder by a friend or colleague who is in desperate need of help. And yet others may simply wish to give back. But it goes even deeper than that. Some of the more subtle benefits of volunteering are:

- Gaining new skills to help you in your current job or future aspirations
- Making new friends and contacts in a new environment

(continued on page 23)



Let's Keep the Water Flowing: GSWA Advocates for Responsible Action

by Sandra LaVigne, Director of Water Quality

In September 2017, concerned citizens from Chatham Township contacted GSWA about a water detention basin that had become clogged with vegetation so it was no longer functioning properly and was causing neighboring areas to flood. Detention basins are designed by engineers to collect and slow the flow of runoff from stormwater reducing erosion in the nearby streams and reducing or preventing flooding in adjacent areas. These basins regularly remain empty, only filling when runoff from storms enters them from parking lots and other impervious surfaces.

The basin in Chatham had become filled in with cattails (*Typha latifolia*) and

other vegetation. Though the presence of vegetation might be aesthetically pleasing, it reduces the effectiveness of the detention basin. When the basin is full of vegetation, there is no longer enough capacity left for the amount of water that should be contained there during a storm. The vegetation can also block the outlets of the basin preventing the flow of water back into the surrounding streams and wetlands.

When GSWA was contacted, Sandra LaVigne, our Director of Water Quality, went out to investigate the concern and see what the issues were. After ascertaining that there was a problem with the vegetation in the basin, she worked with Sally Rubin,



Figure 1: Chatham Hill detention basin filled with cattails and other vegetation.



Figure 2: Chatham Hill detention basin with standing water blocked by vegetation.

Figure 3: Chatham Hill detention basin clean with vegetation all cut back



GSWA's Executive Director, to address the issue. Sally reached out to Chatham Township Committeeman Kevin Sullivan and informed him of the problem and he got right on it. Chatham Township engineer John Ruschke was able to reach out to the property owner and work with them to get the issue resolved. Now, thanks to John they have a plan in place for regular maintenance of the detention basin, clearing the vegetation on a regular basis so that it does not clog the flow of water in the future.

GSWA would like to thank everyone involved in this project. Without the initial contact and the hard work of Chatham Township, this issue might have caused further flooding and damage to homes in the area. 🌱

Why Volunteer *(continued from page 21)*

- Exposing your children to new experiences by volunteering as a family
- Revitalizing your sense of purpose
- Staying healthy by getting out and moving, even if it's just the act of going someplace
- Enjoying that feel-good-feeling because you know you're making a difference

There are many more advantages to volunteering. Once you get out there, you'll discover that you can add to that list.

How do I get started as a volunteer?

Do a little research to see what appeals to you. Perhaps you've been donating to an organization because you feel a connection with their mission. Check out their websites and even visit them to get a better sense of

what they do. Be sure to consider things like how much time you can commit, what type of duties would appeal to you, and what skills you could bring to the job. Once you have made your choice, be sure to ask questions to fully understand what would be expected of you. The key is to find a volunteer position that you would enjoy, and that you are capable of doing.

Have I convinced you yet?

There are so many important causes that could use **your** specific skills — whatever it is that you have to offer. Look around and find what speaks to you, and become a volunteer. It's good for your mind, body and spirit! Contact me at vthorpe@GreatSwamp.org if you'd like to volunteer at GSWA! 🌱

Water Quality Monitoring Programs 2017 – 2018

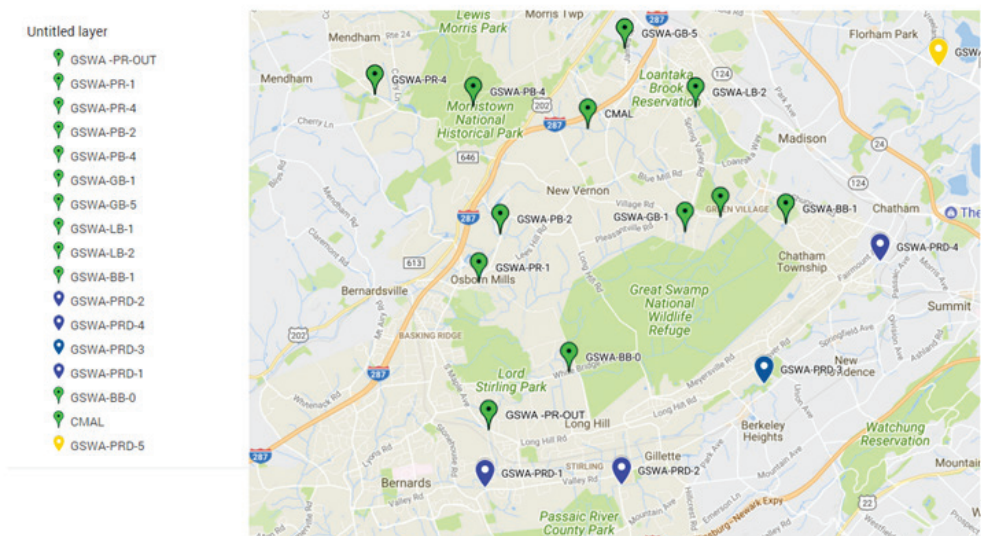
by Sandra LaVigne, Director of Water Quality

In 2017 GSWA began our Passaic River expansion program for all types of water quality monitoring; chemistry sampling, visual assessments, bacteria monitoring and macroinvertebrate sampling. For chemistry sampling this included four new locations downstream of the Millington gorge, ranging from Basking Ridge to Summit (see blue markers on map). Sampling was conducted at sixteen locations on four separate dates throughout the year to capture seasonal changes at each site. These results will be compiled to make up the backbone of the 2017 Watershed Report Card. The new downstream sampling was funded by a grant from The Watershed Institute, and represents our first set of baseline data for this area.

Initial review of the results indicates that our downstream areas are impacted more heavily by nutrient loading than our historic upstream sites. Many factors play into the results, including the precipitation in the area which carries runoff into the streams. In our historic areas, this can be mitigated to an extent by the natural filtering of the vegetation and wetland/swamp areas. However, as we move downstream, there are fewer buffer zones and wetlands to naturally filter the runoff before it enters the waterways. This can be further compounded by the addition of effluent from waste water treatment plants. Though each plant may be in compliance with NJDEP regulations, the addition of

(continued on opposite page)

2018 Chem Monitoring w/downstream sites



We're Proud of Our Own...

by Val Thorpe, Director of Communications and Membership

If there's one thing I've learned since joining GSWA, it's that every staff member is highly passionate about driving our mission forward! It's not recognition that motivates this team, it's about working hard to achieve positive results. Nobody here would ever pat themselves on the back, because as with most people who work in the not-for-profit sector, the work itself is the reward. That said, I think it's perfectly acceptable for me to sneak in a few words about two of our

staffers who received prestigious awards in 2017. Shhh... please don't tell them.

In May, our Executive Director, Sally Rubin, was presented with the 2017 U.S. Environmental Protection Agency Environmental Champion Award. She received this award as recognition for "those who have demonstrated an outstanding commitment to protecting and enhancing environmental quality and public health."

Hazel England, Director of Education and Outreach and Land Steward, was one of four women honored at the Conserve Wildlife Foundation of New Jersey (CWF) 12th annual Women & Wildlife Awards in November. Hazel was honored for her strong environmental education program development and "achievements on behalf of New Jersey's wildlife and the advances they have made in professions in which women have long been underrepresented."

Congratulations to Sally and Hazel! 🌲



Water Quality Monitoring *(continued from opposite page)*

effluent from multiple plants can compound to have a higher impact. But as we move downstream, the addition of more tributaries, some of which are substantial, can help with dilution of these nutrients. More data will be needed to help determine the sources of these nutrients and the best practices to help improve the water quality in these areas.

In 2018, thanks to further funding through The Watershed Institute, we will

be adding a 5th downstream location to our sampling. This location (marked in yellow on the map) was selected after preliminary testing, completed with local high school students through our SWaMP (School Water Monitoring on the Passaic) program, indicated elevated levels of nutrients, specifically phosphorus, and suspended solids in the river at this point. 🌲

Stop Sucking

by Kristina Necovska, Membership Associate

When GSWA became the Passaic River Waterkeeper Alliance Affiliate, we modified our mission statement to better represent the realities involved in protecting our water. “One River One Community” means that we need to consider all of the water from source to sea ...and we ought to consider the end destination. In our economy of scale, virtually nothing about our behaviors is neutral. So we ask you, what’s that floating around in your drink? Straws are so much part of our food culture that we don’t even seem to notice them anymore — yet that piece of plastic in your drink has huge implications.

One of the problems is that it’s considered waste before it even makes contact with another human. Single-use plastic is a massive challenge, yet straws, and other single use items represent the plastic that we have a choice over. We can certainly get along without it — how did people manage before?

Consider this: All of the plastic that was ever produced is still in the environment. Once we manufacture it, it only changes form. A small percentage ends up back on the market as post-consumer recycled material, but the majority enters the environment — mostly the oceans — as waste. Some of it breaks down into minute particles and bio-accumulates into our food and water. This is where things get dangerous. If we all make one small change, our collective behavior can have huge wide-reaching implications.



Plastic Facts: Americans use half a billion straws per day (that’s: 500,000,000!). According to one estimate, that equates to 3 million pounds of waste annually of straws alone. If an average (a generous average) of about 30% of waste is successfully recycled in the United States then that means 2.1 million pounds of plastic waste in the form of straws alone enter dumps. That’s not accounting for plain old litter — it’s unfathomable.

- When we consider all of it, at least 8 million tons of plastic ends up in the world’s oceans every year, according to a report by the Ellen MacArthur Foundation. By 2050, trash will outweigh fish unless we commit seriously to stopping it.
- 80-90% of the marine debris is made from plastic. The US contains 5% of the world’s population and produces 30% of the world’s waste. These stats add up.
- In a recent study published in Vol. 359 of Science, coral reefs were found to be 20 times more likely to contract disease due to plastic waste being caught on their surface. Plastic debris stresses coral through light deprivation, toxin release, and anoxia, giving pathogens a foothold for invasion.

That says nothing of the innumerable sealife that unintentionally consume plastic waste. From filter feeders like whales to sea turtles to pelagic birds that succumb to plastic entanglements there is no better reminder that our convenience takes a toll. And there is no better time than now to change our commitment to convenience into commitment to environment.

Changing Tides:

As of February, 2018, Hawaii introduced anti-straw legislation that passed the Committee of Agriculture and Environment. Similarly, California introduced a “Straw Upon Request” legislation that aims to do away with plastic waste. And why not? There is a growing body of cities and countries internationally that have introduced anti-plastic legislation in an effort to curb unnecessary plastic waste; 15 countries in Africa tax or outright ban the sale of plastic bags, six countries of Europe tax or prohibit the sale of single use plastic. Most recently, France has made the notable effort to ban the sale of plastic utensils outright by 2020 in favor of compostable substitutes.

What Can I Do?

Level 1: Personal Commitment.

Living the green life means considering the environment in each of our actions. When we’re out at restaurants, politely ask “no straws please” at the start of each meal.

Level 2: Community Initiatives: We have environmental activism in our blood here in New Jersey. We should remember that the Great Swamp was saved by a community of like-minded individuals and we should ask our friends for help in requesting our towns and state to support a “no straw” or “no plastic” initiatives.

Level 3: Invite business owners to lead by example by adopting ‘plastic-free’ initiatives. We can politely request that small business owners make a visible commitment by choosing to limit single-use plastics.

There is a reason why “recycle” is the last word in the motto “Reduce, reuse, recycle.” The best way to eliminate waste is to not consume it. We ought to remember the first word of that phrase. Reducing our use to zero will save 100% of waste that might otherwise find its way into the ocean. 🌲

GSWA Experts Available to Speak to Area Groups

Do you wonder, “What is in my water?” or “What can I do to ensure clean water for my children?” These and other questions about water quality, land preservation and local efforts to protect the environment can be answered by GSWA’s Speakers Bureau, who will present interesting, hands-on presentations that will educate and inspire members of your local club or group. Call today for more details: (973) 538-3500, or email Sally Rubin at srubin@GreatSwamp.org.

School Stormwater Demonstration Rain Gardens Completed

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

It's not often you hear kids hoping out loud that it will rain, but that was a common sentiment among Maureen Bruins' 7th grade science class students the day after they helped add the finishing touches to the rain garden installed at their school in Paterson!

GSWA received funding from the Passaic County Community Foundation to work with more than two hundred Paterson students over the course of a year at three schools, PS4 Elementary, Paterson Academy of Gifted and Talented (PAGT) middle school students, and the High School of STEM, to conduct water quality and green infrastructure education around the installation of three

rain gardens occurring at their schools. GSWA's educational contribution to the project came about through our involvement in Paterson SMART, a collaboration of likeminded organizations working toward green infrastructure stormwater solutions in Paterson.

As an urban community, Paterson has a high percentage of impervious cover, along with an aged sewer system. Pipes combine stormwater from roofs and storm drains and wastewater from homes and businesses into a single combined system (CSO) that is overwhelmed and fails even in light rain, causing overflow outfall pipes to discharge untreated wastewater directly into the Passaic. Rain gardens, which capture stormwater and divert it into the ground where it can recharge groundwater and reduce flow in overworked sewer systems, work especially well where they replace impervious surfaces such as black top playgrounds! This was the case in all three of the schools chosen to receive them. At PS4 and PAGT, the schools sit on 100% blacktop — so flooding and runoff are major issues. Some schools in Paterson even have stormwater flood closures more often than snow closures! GSWA staff, partnering closely with Rutgers Cooperative Extension Water Resources Program staff who coordinated the permitting, engineering design and planning of the rain gardens, developed a program to educate the students. Over multiple visits in an eighteen month period, students learned about where their water comes from, what



PAGT students planting their rain garden.

JFK HS students along the edge of their rain garden.



happens to it along the way that can impact its quality, what we can learn about managing stormwater by learning about how natural systems handle rain, and what solutions could improve the problem. The final and most important step was to have students involved hands-on in planting the finished rain garden.

Armed with our topographic model and hands-on Enviroscope pollution education model, we went into classrooms to help the students understand the issues in their community. Field trips to Great Swamp National Wildlife Refuge and the GSWA Conservation Management Area followed, helping students gather information about the role of soils in trapping excess pollution, the value of native plants for pollinators, how the components of a functioning ecosystem work, and how water quality can impact the macro-invertebrate communities living in streams and rivers. We returned to the schools and looked at how to assess a site for where stormwater gathers, how a rain garden works, and how to choose plants that would thrive in the different wetness zones created by the shallow depression of the garden. Finally, we helped students to choose the actual species that would be incorporated into Rutgers landscape designs for the finished project. Students in groups

selected native plants for the final design that would thrive in a range of wetness zones, had different flower color, bloom times, and pollinator and other wildlife benefits. The chosen native species list was passed along to Rutgers who incorporated these choices into the final planting design.

Finally, late last fall, students, GSWA staff, interns and volunteers worked alongside Rutgers staff at the big day, when the already engineered, but bare rain gardens were transformed with the addition of the living material that will be so important to the success of the rain gardens. Students learned best planting techniques, and were excited when they found they were planting the delicate plugs of plant species that their own group had chosen for the finished design! They gardened alongside people who have made, or are studying to make, their careers in different branches of science, and got the chance to talk about what they had learned from the project and what they might like to do when they grow up in an informal and

(continued on next page)

GSWA Welcomes Another New Employee!

Welcome Adam Palmer, Education Associate

Adam joined GSWA in November, 2018. A self-described outdoorsy person from an early age, Adam and his dad enjoyed many nature walks together, taking in the beauty of the great outdoors. After college graduation, his passion for nature led him to volunteer at the New Jersey Conservation Foundation, and The Nature Conservancy. He then moved on to the Somerset County Parks Commission where he worked as a naturalist in the Environmental Education Center at Lord Stirling Park. Finally, his volunteer efforts led him to us. Adam brings with him a wealth of experience and energy which will be an enormous help in the delivery of our education programs. With our expanded mission of bringing our water quality education programs to downstream communities and schools, Adam's work will



Adam Palmer, Education Associate

focus downstream, especially in Paterson and Newark. 🌲

Rain Gardens *(continued from previous page)*

positive way. For many students, planting the rain garden was the first time they had ever gardened or touched dirt in any positive way! Once the hundreds of tiny plant plugs were watered in, the mulch replaced, and the pots cleared away, the students were eager to have it rain so that they could see their rain garden in action!! In the spring, GSWA will

return to carry out some touch-up work, work with students on interpretive materials for the garden, and continue to build knowledge and stewardship of this valuable green infrastructure demonstration project, creating a group of young advocates who can spread the word about innovative ways stormwater can be managed. 🌱

by Wade Kirby, Director of Development

I like to call 2017 a “banner year” for the Great Swamp Watershed Association. A combination of hard work, outstanding donor support and good fortune brought us some milestone achievements for the first time in the organization’s 36-year history.

On October 12, 2017, at the beautiful Brooklake Country Club, we hosted 410 attendees at our Fall Gala. The generosity of our Board of Trustees, members and donors who attended and brought guests surpassed records of any previous Gala in GSWA history! A total of nine underwriters helped to ensure the evening’s success that included a diversified assortment of both silent and live auction items provided by many, many dedicated supporters to whom we are very grateful. Former New Jersey Governor Christine Todd Whitman was the evening’s honoree and featured speaker. She received guests at a VIP cocktail hour followed by an address during which she spoke out in strong defense of our mission, clearly stating how vital clean and potable water is for the survival of any society. Without it, nothing else much matters. Revenue earned from the evening totaled \$210,000. Many thanks to the dedicated staff, members of our Board of Trustees and Advisory Council, fabulous

gala committee members and attendees for making the evening such a remarkable success.

Success such as this doesn’t happen by accident, but through the efforts of a dedicated staff coupled with the support from donors who recognize the necessity of our work. In 2018, I cannot stress how important it is for you to continue and increase your financial support to ensure our ongoing and expanding work both in the Great Swamp region and downstream along the Passaic River. We produce a full calendar of both recreational and educational events to cover each season of the year. Have you attended one lately? Why not bring a friend? Please contact me at wkirby@GreatSwamp.org if you’d like to receive our electronic notifications. Have you experienced the call of a Barred Owl up close at 10 p.m.? Come and join us!

And for the first time this year, we will substitute our annual House Tour for a live music festival on the historic Hartley Farms Polo Fields, the site of the once famous dog show hosted by Geraldine Dodge. Mark your calendars for Sunday afternoon June 10th from 1 to 5 p.m. — an event not to be missed! 🌲

Know Someone Who Would Like to Become a Member?

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

GSWA “Where the River Meets the Road” Photo Contest

The Passaic River winds over 80 miles from its source, as a tiny stream in Mendham, to where it enters Newark Bay as a mighty river. We are challenging you to capture a piece of it in a photo. Take a picture showing a favorite spot under a bridge, as it runs along the road you take to work, where it crosses your favorite hiking path. The goal is to take the best shots and create our first ever GSWA calendar for 2019 “Where the River Meets the Road.” The contest will run from February 1st through November 30th 2018. Each month GSWA staff will choose the winner from the photo submissions of that month to be the featured photo in the corresponding month of the 2019 calendar. Winners will be announced monthly and their photos will be displayed on our website and facebook page. See below for rules and submission requirements.

What to enter:

Pictures of the Passaic River and its tributaries (see our website for more information about our watershed, its streams, and the Passaic River.) To be eligible, pictures must be taken within the current month: i.e., to submit in March the photo needs to be taken in March 2018. Pictures must include the river/brook/stream and are encouraged to include the cross street or path where it is “crossing.” Your photos can be as artistic as you like.

Include the following with your photo submission:

- Location (GPS preferable) AND nearest cross street
 - ◆ Including a parking area if the picture is taken along a path
 - ◆ If in a park include the park name
- Name of Stream/River
- Your name
- Your e-mail address
- A brief description of what is going on around and in the river at this point.

Entries may originate in any format including, but not limited to, digital files, digital prints, color transparencies, color or black and white prints, but must be submitted electronically in .JPEG, .jpg, or .png form. Multiples that have been combined to produce a single “High Dynamic Range” image are acceptable. Files should be no larger than 20MB and should have a resolution of at least 240dpi/ppi.

How to enter

All images should be submitted to: info@GreatSwamp.org and note the subject line “where the river meets the road.” Entries for each month will be accepted through the 5th of the following month (i.e. March submissions will be accepted until April 5th). You may enter as many times as you like each month.

Judging

Each month the GSWA staff will vote on their favorite photo from the submissions. The photo with the most votes will be the winner, announced on the GSWA website as well as our FaceBook page and other social media.

The winning monthly photo will also be featured in the 2019 GSWA Where the River Meets the Road calendar. Each winner will receive a free copy of the calendar. 🌲

Here is the winning photo from January!

This beautiful spot along Blue Mill Rd. in Morristown is where Great Brook spills from Silver Lake to continue on its path to the Great Swamp. On a rainy day like this one in late January, the falls are spectacular.

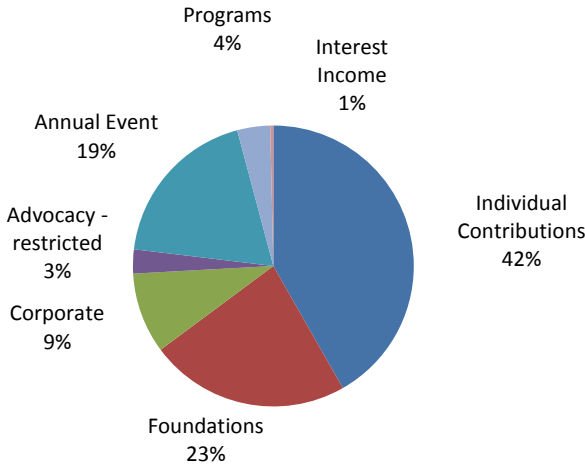


Financial Report: Statement of Activities for the Fiscal Year Ended June 30, 2017

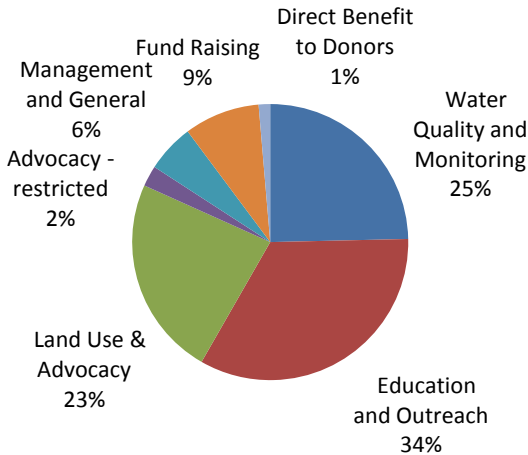
by Sue Levine, Director of Finance & Human Resources

	2017
INCOME	
Individual Contributions	\$ 287,037
Foundation Support	158,580
Corporate - see Note 1	63,949
Annual Event (Gross)	130,290
Endowment transfer in (4% draw) - see Note 2	-
Programs	26,040
Miscellaneous & Interest Income	2,462
Total from Primary Operations	668,358
Other Adjustments	-
Pilgrim Pipeline Restricted Income	19,030
TOTAL INCOME	\$ 687,388
EXPENSES	
Programs:	
Water Quality and Monitoring	\$ 177,219
Education and Outreach	\$ 241,977
Land Use & Advocacy	\$ 168,622
Restricted Pilgrim Pipeline Advocacy	\$ 17,482
Total Program Expense	605,300
Management and General	40,564
Fund Raising	63,685
Direct Benefit to Donors	9,694
Total from Primary Operations	719,243
TOTAL EXPENSES	\$ 719,243
SURPLUS/(DEFICIT) - see Note 2,3 (a)	\$ (31,855)
ENDOWMENT ACTIVITY	
Market Value 6/30/16	\$ 1,004,107
Investment Income & Interest Earned (b)	39,198
Gain/Loss on Investments (c)	90,622
Net change - see Note 3	129,820
Contributions	1,615
Transfer to Board Designated (4% draw - 2 years) - see Note 2	\$ (78,084)
Market Value 6/30/17	\$ 1,057,458

INCOME



EXPENSES



Note 1: Income from the Corporate category excludes matching gifts \$4,193. These funds are included in Individual Contributions.

Note 2: There was \$0 depreciation. In addition, the organization did not draw the 4% allotted to operations from the endowment. Instead the funds (\$38,084) were set aside as Board Discretionary in the Endowment.

Note 3: To tie to the audited financial statement's "change in net asset" line, you need to add (a), (b), (c) above. The audited financials reflect a gain of \$97,965.



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