



The Great Swamp Watershed Association

ACROSS THE WATERSHED

Fall-Winter 2011

Protecting our Waters and our Land for 30 Years

New Jersey's Great Swamp: A Tradition of Community Involvement

With our 30th Anniversary Gala right around the corner, Steve Reynolds, our new Director of Communications & Membership, decided to look back through the organization's photo archives to learn some more about where we have been. Our collection stretches back into the 1960s, almost 20 years before the Great Swamp Watershed Association was

officially formed. What we discovered can only be described as a long tradition of environmental education, advocacy, and stewardship supported by communities throughout our watershed. We hope you enjoy browsing these images as much as we did, and we hope you feel the same kind of pride we do in the remarkable accomplishments achieved in the name of the Great Swamp. 🌲



Environmental Education in Great Swamp, 1967—present

(1) Great Swamp tour, Nature Trail Area, Oct. 21, 1967. (2) Classroom teaching with middle school students using a GSWA watershed model, 1999. (3) Students learn about water quality in the field, 1986. (4) Current Director of Education & Outreach Hazel England demonstrates watershed dynamics to elementary school children—yes, that's the same model from 1999! (5) Information abounds on this guided tour of Great Swamp National Wildlife Refuge (GSNWR) in 1996. (6) A bird-watching tour learns from birding expert Emile DeVito at GSWA's 2011 BioBlitz.

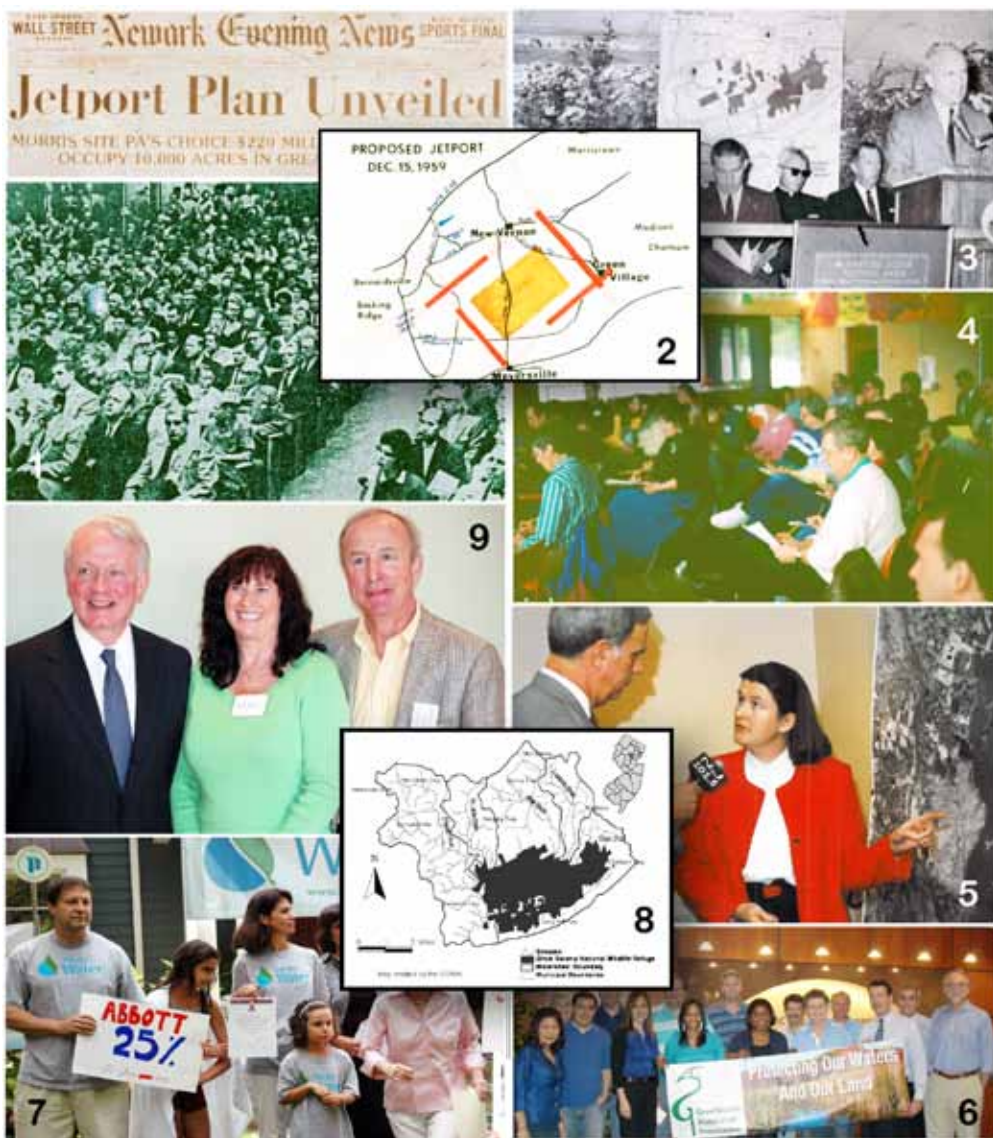
Environmental Stewardship in Great Swamp, 1973—present



(1) A perspective on Millington Gorge and water running from the Great Swamp headwaters into the Passaic River, prior to 1986. (2) Millington Gorge from above, July 2009. (3) Workday volunteers haul a completed boardwalk into Great Swamp, 1999. (4) Current Director of Water Quality Programs Laura Kelm (right) plies her trade, May 2011. (5) Dr. Lee Pollock (right) demonstrates some of the finer points of

macroinvertebrate surveying, 1999. (6) Two workday volunteers assemble a boardwalk at the Conservation Management Area, 2010. (7) Water quality monitoring in Great Swamp prior to 1986. (8) A shot of fall leaves along Black Brook—one of the Great Swamp’s five main streams, 1973. (9) A shot of Black Brook from another angle showing PSEG’s high-tension wire right-of-way, 2008.

Environmental Advocacy in Great Swamp, 1959–present



(1) December 14, 1959—the Newark Evening News announces the Port Authority’s jetport plans for the Great Swamp (above). Local citizens pack Madison High School in an effort to stop jetport construction, circa 1960 (below). (2) A rough footprint of the Port Authority’s proposed jetport overlays a map of lands between New Vernon, Green Village and Meyersville, circa 1959. (3) U.S. Rep. Peter H.B. Frelinghuysen addresses citizens attending the dedication of the Great Swamp National Wildlife Refuge on May 29, 1964. Lands once slated for jetport construction appear on the map behind the podium. (4) A local community meeting to discuss environmental issues,

date unknown. (5) Long-time Executive Director Julia Somers shares some of GSWA’s environmental gospel with the media, 1997. (6) Some of the corporate citizens who have helped protect our waters and our lands in the Great Swamp, 2011. (7) GSWA supporter Kathy Abbott and her family make an important statement about reducing household water consumption as part of the U.S. Environmental Protection Agency’s WaterSense campaign, 2010. (8) A current map of the Great Swamp Watershed and its tributaries, 2011. (9) U.S. Rep. Leonard Lance (NJ-7th District) and U.S. Rep. Rodney Frelinghuysen (NJ-11th District) flank current GSWA Executive Director Sally Rubin.

From the Desk of the Executive Director



by Sally Rubin

Summer vacation is over and the start of a new school year is here once again. Yes, I can hear you parents cheering! It's time to head back into the classroom and expand those horizons. GSWA is getting ready to head back to school too. Our educators are dusting off our watershed models and will be right there alongside you and your kids this year with some great environmental programs.

As you read through this edition of *Across the Watershed*, you will find a strong current of education and learning threading through all of the articles and announcements. Our cover story and 30th Anniversary photo retrospective already taught you something about the tremendous history of community involvement engendered by Great Swamp environmental issues and supported by GSWA. It's hard to believe GSWA has been actively involved in local environmental issues for 30 years. So much has changed and yet we seem to face the same issues. The constant pressures of development continue to weigh against the need to protect our fragile environment and natural resources. We still worry about the quality and quantity of water and the biodiversity it supports.

This is also an opportunity for us to tell you a little bit about what we have learned about Great Swamp over the summer. Results are in from BioBlitz 2011, which was held in late June at the Great Swamp National Wildlife Refuge, and, of course, the findings are interesting! Hazel England,

our Director of Education and Outreach, will walk you through what we have learned about seasonal changes in wildlife behavior and the importance of our BioBlitz survey teams in her article, *What A Difference Two Years Make: A Roundup of BioBlitz 2011*.

BioBlitz was chock-full of important discoveries this year, and not all of them scientific in nature. For me, the event conveyed a powerful message about the value of community engagement and GSWA's ability to touch and improve the lives of others. Just a few days after we had folded up all the tents and hauled our waders, test kits and other equipment away from the Helen C. Fenske Visitor Center, we received a phone call from a BioBlitz participant named John. Some of our staff met John and his young son, David, soon after arriving to work at the event on Day 1. Some ugly looking storm clouds loomed on the horizon, but, despite the threat of rain, these two were first in line for the evening's presentations on bats, insects, frogs and owls. That cloudburst eventually hit and all of us got soaked, but John and David were not deterred. They stayed at BioBlitz past 10 p.m. that evening, then returned for Day 2. The pair even stuck around to help our scientists and volunteers clean up after the event. David's keen interest in biology and the environment was impressive for a kid his age, but we had no idea exactly how important BioBlitz had been until we heard from John later the following week.

“You changed David’s life,” John said at the other end of the telephone line. “He got to see grown-ups, real people, doing the things that he loves. Things will never be the same for him.”

WOW! How often do you get to hear how much of a difference your hard work makes? How often do you get to hear that you have changed a life for the better?

John and his family have since become members of GSWA. Not very long after we sent him his welcome letter, John sent us an email message thanking us for his BioBlitz experience once again. “The people at the Great Swamp were without exception kind, generous and knowledgeable,” he wrote, “and most importantly made my son feel special. I am proud to be a member of a group of such great people.”

Thank you, John! Thank you, David! And, thanks to everyone like you out there in the Great Swamp Watershed community. You have reminded all of us here at GSWA why we do what we do. You have taught us again that we can make a difference.

This newsletter is only the smallest of returns GSWA can provide against the generosity we receive from supporters each day. Nevertheless, it represents one of the best tools at our disposal for keeping you up-to-date on everything we are doing to protect the waters and the land that you love and respect. Please read through this newsletter and see what GSWA has been up to and what we have planned for the fall. I am especially pleased to share information about the recent land-use victory at Primrose Farm Estate in Harding. And, in keeping with our educational theme, do not forget that you will find announcements for all of our upcoming Fall 2011 events in these pages. Make sure

(continued on page 25)

ACROSS THE WATERSHED

is a publication of the **Great Swamp Watershed Association**.

GSWA is a member-supported non-profit organization that has been protecting our waters and our land for 30 years.

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Special thanks to all those photographers who contributed to “The Great Swamp Watershed Association,” a slide presentation written by Dick Lynch in 1986.

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30th Anniversary Gala, October 13


The gala celebrating Great Swamp Watershed Association's 30th year of service to the environment and local communities will take place on Thursday, October 13, at the Westin Governor Morris in Morristown. This year's gala theme will be **A Watershed Event** and will honor Great Swamp Watershed Association founder Abbie Fair and long-time executive director Julia Somers.

More than 40 items with a combined value of more than \$14,000 are already committed to our gala auction. What's on the list? Here's a sneak peak:

- Orchestra seats for the Metropolitan Opera
- An autographed photo of baseball legend Hank Aaron's 715th home run
- Tickets to a production at Princeton's McCarter Theater
- A getaway at Chimney Hill Estates in Lambertville
- A Baltusrol golf outing
- Dinner and lodging at the Black Bass Hotel
- An aerial tour of Great Swamp
- An aerial tour of the Hudson River
- 4 one-day Park Hopper passes for Disney theme parks
- Select bottles of wine!



GSWA is now blogging at
<http://acrosstthewatershed.blogspot.com>

Please join us as we celebrate this important milestone in GSWA history and help us honor Abbie and Julia, two of the Great Swamp's most ardent supporters! If you would like an invitation but have not received one, please contact us by calling 973-539-3500 or by sending an email message to drice@greatswamp.org. More information about the gala is available on our website at www.greatswamp.org. 



Credit: S. Reynolds

Eco-sensitive Pond Management Saturday, September 17

Garabrant Center, Mendham, NJ

Dr. Stephen Souza, president of Princeton Hydro, LLC., will speak on Saturday, September 17th, at 10 a.m. in the Garabrant Center, 4 Wilson St., Mendham. Dr. Souza, a hydro environmental consultant will discuss how to be ecologically sensitive in the maintenance of ponds and the surrounding ecosystem. He will discuss the biology, the hydrology and the chemical interactions of pond life. This program is free of charge and a presentation of the Mendham Borough Environmental Commission. For more information, please call Laurie Felber at 973-543-0663. To register, please write to esandman@mendhamnj.org.

Watershed Watch – Environmental Hot Spots

by Sally Rubin, GSWA Executive Director

Summarized below is our “hottest” “hot spot” and one we are especially proud to participate in.

Harding: Primrose Farm Estate

On Wednesday, July 13, 2011, about 100 residents turned out for a Harding Township Committee meeting where committee members decided the fate of 45 acres of prime open space (Phase I) at Primrose Farm Estate. With a vote in favor of preservation hanging in the balance, GSWA, Harding Land Trust, and Harding Open Space Trust successfully rallied citizens on behalf of the town’s open space plan. Many of those who showed up spoke out against relegating the Estate to the developers’ bulldozers.

Although the Committee voted unanimously to keep 45 acres of Primrose Farm undeveloped and open for public recreation, final decision-making on the issue appeared to be close. Our profound thanks go out to

all those who stood up for open space and the environment on July 13. Without your unwavering commitment to the Primrose preservation, 13 new “McMansions” would be ready for construction and the single largest and most-naturally-diverse piece of outdoor space left inside Harding Township would be no more.

On August 9, 2011, Harding Land Trust received a New Jersey Green Acres grant of \$260,000 designated to help protect 75 more acres of land at Primrose included under Phase II of the open space plan. We hope that the township receives additional funds from Morris County to purchase the 75-acre Phase II properties as well. Great Swamp Watershed Association has agreed to apply for Green Acres funding to help with the preservation of Phase II. Preservation activities will move ahead for Phase I regardless of the outcome on Phase II. 🌲

ACROSS THE WATERSHED is also available electronically

Help reduce our print and mailing costs by signing up for electronic delivery of future issues of *Across the Watershed* at www.greatswamp.org or send an e-mail with your name and address (so we can identify you in our member database) to sreynolds@greatswamp.org. By giving GSWA your e-mail address, you’ll also receive our monthly e-newsletter, which provides timely information on upcoming

programs and events along with news on what’s happening in and around the watershed.

Your e-mail address will be used solely for the purpose of sharing information with you about GSWA-related programs and events. We will not provide your e-mail address to any other person or entity without your permission.

Teacher Education Workshops

GSWA facilitates workshops for K-12 formal and non-formal educators that focus on core-content-correlated activities they can use back in the classroom or Nature Center. Each six-hour, hands-on workshop led by GSWA's own experienced naturalist educator, Hazel England, provides participants with activity guides chock-full of relevant and engaging content that can be interwoven into existing curricula. Workshops are \$15 unless otherwise noted and include breakfast. Professional development credits are available. For more information, please email Hazel at hazele@greatswamp.org. Workshops take place at Great Swamp Watershed Association offices at 568 Tempe Wick Road in Morristown unless otherwise noted. Please register online at www.greatswamp.org to attend.



GSWA teachers' workshop, 2009.

Testing The Waters: Introduce Your Students to the Science of Water Quality **Saturday, November 19, 9 a.m. - 12:30 p.m.**

Helen C. Fenske Visitor Center, Great Swamp National Wildlife Refuge, 32 Pleasant Plains Road, Harding Township

Join GSWA for a pilot workshop to find out just how much can be learned from testing local streams and ponds in the Great Swamp watershed. We will use cheap, easy-to-obtain water quality test kits to maximize the scientific know-how you take away from this hands-on program.


The workshop will take place indoors and out, and will feature engaging lessons that introduce and deepen your students' understanding of water resource issues. All activities will relate to core content standards outlined by the state, and will provide fun, hands-on instruction to help your students gain real-world science experience. Use this opportunity to amplify messages about water pollution among your students.

The program is suitable for formal and informal educators teaching in grades 3-12 and beyond. This workshop is co-sponsored by GSWA and the Great Swamp National Wildlife Refuge (GSNWR). **Professional development credits are available.** Please dress appropriately for the weather and for outdoor activity inside GSNWR.

**Project WET: Generation 2! Workshop
Date & time to be announced**

*GSWA Offices at 568 Tempe Wick Road,
Morristown*

A brand new version of the amazing Project WET Curriculum and Activity Guide is here!! Attend this workshop and get your copy before they disappear! This three-hour refresher is FREE. If you have attended a previous six-hour Project WET workshop, bring the original guide you received there and we will exchange it for you.

Special registration instructions: Contact Pamela Mayer, NJAES—OCPE c/o Project W.E.T., 102 Ryders Lane, New Brunswick, NJ 08901-8519. Phone: (732) 932-9271. Fax: (732) 932-1187. Email: pspring@rci.rutgers.edu. The course code for this workshop is EW0501CD12. 

**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 www.greatswamp.org for more information.

***The Highlands Rediscovered*
Wine & Movie Night with
special guest Julia Somers
Thursday, October 27, 6:30 – 8:30 p.m.**

*GSWA Offices, 568 Tempe Wick Road,
Morristown*

Please join GSWA and special guest Julia Somers, Executive Director of the New Jersey Highlands Coalition, for a timely screening and discussion of the movie *Highlands Rediscovered*. This important documentary film is a visually captivating exploration of an under-appreciated wilderness, featuring stunning photography of some of New Jersey's most expansive wooded landscapes. New Jersey's northern Highlands is the forested region which supplies water for more than four million people in the urban corridor encompassing Newark and Jersey City. The documentary examines how a wilderness region and its natural resources, saved from past abuse, are once again threatened by highways and development.

Program is free for GSWA members. For non-members, the fee is \$10 per adult, \$5 for each child over 5, and \$30 per family. To register, please visit www.greatswamp.org and click on our secure Event Registration page, or call the GSWA Event Information Line at 973-538-3500 x22.

Educational Programs

Learn more about what's going on in and around the swamp by joining friends and members of GSWA for our fall educational programs. We ask that you pre-register for these programs to learn meeting locations and other information. Please wear sturdy footwear and bring a snack for the walks. Feel free to bring binoculars or wildlife guides if you have them. These programs are free for GSWA members. For non-members, the fee is \$10 per adult, \$5 for each child over 5, and \$30 per family. All fees associated with educational programs held at Great Swamp National Wildlife Refuge are suggested voluntary donations only. To register, please visit www.greatswamp.org and click on our secure Event Registration page, or call the GSWA Event Information Line at 973-538-3500 x22.

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 x13.

Fall Colors Hike in the Great Swamp Watershed Sunday, September 25, 3:30 – 5 p.m.

Conservation Management Area, 1 Tiger Lily Lane, Harding Township



Fall tree and light. Credit: B. Rothausen.

The Great Swamp Watershed Association owns approximately 50 acres of land in Harding Township, New Jersey, that it maintains as a Conservation Management Area (CMA). This forested wetland contains vernal pools, streams and woodland that are teeming with wildflowers and wildlife alike. We will take an afternoon stroll along the recently expanded boardwalk trails, listening for birds and watching out for the fabulous fall foliage displays of native plants. Look forward to the season of mists and mellow fruitfulness on this easy-paced hike at an important restoration area.

twitter

Follow us at www.twitter.com/gswa

Rain Garden Workshop

Tuesday, October 4, 7 – 8:30 p.m.

*GSWA Offices, 568 Tempe Wick Road,
Morristown*

Learn more about the benefits of storing the water that flows from your roof and driveways in a water-quality-improving rain garden. We will demonstrate the process using our very own rain garden. Installed in 2008, GSWA's rain garden feeds a variety of native plants with water diverted from a third of our office's roofline. This is an indoor/outdoor program and will be held rain-or-shine.

Full Moon Hike at Morristown National Historical Park

Saturday, December 10, 6 – 7:30 p.m.

*GSWA Offices, 568 Tempe Wick Road,
Morristown*

While we cannot guarantee the moonlight, there will be plenty of nature to learn about on this night hike around the watershed. We may hear many of the watershed's wild inhabitants including owls, flying squirrels and perhaps even coyotes calling! Get your senses sharpened as we play some games to learn more about night senses, and revel in being out after dark without a flashlight! Hot cider and mulled wine will warm us up after we return from our outing. 🌲

Introduction to Geocaching Workshop Saturday, November 5, time to be announced

*GSWA Offices, 568 Tempe Wick Road,
Morristown and CMA, 1 Tiger Lily Lane,
Harding Township*

Geocaching, a global game of treasure hunting using longitude and latitude coordinates, is a fun-filled adventure for all ages. With a GPS receiver and Internet access, you are ready to explore and search for a "geocache". Join GSWA and the Northern New Jersey Cachers (NNJC) as we present a special workshop introducing geocaching basics. This is a great chance for those who know nothing or little about this eco-friendly sport to learn and experience this growing family activity.

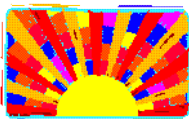
PSEG Gives \$15K for Environmental Education

This past June, PSEG Environmental Policy Manager Russ Furnari delivered some fantastic news. PSEG will be supporting all of our environmental education efforts, including School Water Monitoring on the Passaic (SWaMP) in fiscal year 2012! Executive Director Sally Rubin gratefully accepted the energy services company's check for \$15,000 check in support of ongoing GSWA environmental education effort.

Thanks Russ! And, thank you PSEG!

Start Your Day with GSWA

GSWA's Breakfast Briefings have returned after a restful summer vacation! Here's what we have for you in coming months:



Tuesday, September 13: Vegetation and Deer Management at Jockey Hollow Park

Jill Hawk, Superintendent of the Morristown National Historical Park, stops by to tell us more about the public scoping process that will help the National Park Service draft a Vegetation and White-tailed Deer Management Plan and Environmental Impact Statement (plan/EIS) for Jockey Hollow. The purpose of the plan/EIS is to address issues associated with nonnative invasive plant species proliferation that prevents native tree regeneration; the effects of white-tailed deer browsing on tree regeneration; and the loss of key aspects of the park's cultural landscape.

Tuesday, October 11: Dealing With Deer In Our Region

Emile DeVito from the New Jersey Conservation Foundation stops by to speak with us about deer herds in northern New Jersey and various management techniques that can be used to prevent environmental destruction due to over-grazing. Local deer populations are estimated to exceed 100 deer per square mile, while natural carrying capacity is closer to 10-to-15 deer per square mile. Large deer herds can reduce biodiversity in a region by trampling or consuming native undergrowth.

Tuesday, November 15: Fracking: What You Need To Know About Hydraulic Fracturing For Natural Gas

Energy producers extract natural gas by drilling wells into targeted rock formation, then filling the wellbores with pressurized fluid. As the surrounding rock cracks under pressure, natural gas is released at an increased rate and collected for further refinement. This process, known as hydraulic fracturing, or fracking, is not conducted without potential danger to water and air quality. In a number of documented cases "fracking fluid" used for gas extraction has contaminated groundwater and forced uncollected gas and chemical onto the earth's surface. Fracking also produces industrial waste that must be disposed of with care. While there is no ban on fracking in the state of New Jersey, Gov. Christie recently proposed a one-year moratorium on the practice. Please join us as we invite an expert on fracking, to tell us more about this controversial extraction technique and



Volunteers install deer fencing at GSWA's Conservation Management Area, 2005.

the impact it might have on all New Jersey residents. Speaker to be announced.

Each Breakfast Briefing is held at GSWA's office at 568 Tempe Wick Rd., Morristown, starting at 8 a.m. A continental breakfast is included. Donations are appreciated.

Free for members. The fee for non-members is \$10 per adult, \$5 for each child five and over, and \$30 per family.

Please pre-register by visiting www.greatswamp.org, or call our Event Info Line at 973-538-3500 x22. 📞

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

Protecting Our Waters and Our Land: An Exhibit Celebrating the 30th Anniversary of the Great Swamp Watershed Association

Opening Reception: December 2, 2011, from 6:00 p.m. to 9:00 p.m.

Exhibition Dates: December 1, 2011 through January 27, 2012

*Location: Studio 7, 5 Morristown Road, Bernardsville, NJ &
Bernardsville Public Library, 1 Anderson Hill Road, Bernardsville, NJ*

Studio 7 Fine Art Gallery and GSWA have invited selected artists to submit oils, watercolors, pastels and photographs reflective of the organization's accomplishments over the last 30 years. A portion of proceeds taken from the sale of exhibition pieces will go to GSWA.

Please join the Board of Trustees and staff of the Great Swamp Watershed Association at an opening reception to be held on December 2 between 6 and 9 p.m. at Studio 7, 5 Morristown Road in Bernardsville, NJ. Additional information will be made available on GSWA's website. For more information, please call GSWA at 973-538-3500 or write to drice@greatswamp.org. For questions about the exhibition or submissions, please contact Kathleen Palmer at Studio 7, 908-963-0365, pskjpalmer@verizon.net, or Ben Wolkowitz, 973-765-9056, wlkwitz@yahoo.com.

Indicator Species

by Blaine Rothauser, CMA Biologist

If you go for a walk in the heart of the Great Swamp National Wildlife Refuge (GSNWR) you unavoidably traverse many different types of natural landscapes: uplands, wetlands, meadow, and flood plain. If you walk outside the refuge you might come across one or more of these natural mosaics, along with another—the human-created landscape. The raindrop that finds its way to the refuge through the downward forces of gravity defines the boundaries of our Great Swamp Watershed. Inevitably, the drops combine to become free-flowing water. This water now must travel through one of the forementioned habitats before a biological process consumes it, a wetland stores it, or a tributary passes it along to another destination. If it is our job as land stewards to protect the destiny of all this water, then we need a tool to monitor its health and well-being. Welcome in the “indicator species.”

The term *indicator species* is loosely defined, and the usefulness of any single definition may vary. Broadly clarified, indicator species are plants and animals that, by their presence, abundance, lack of abundance or condition, demonstrate some distinctive aspect of the character or quality of an environment. For instance, certain species of mustard plants are good bioaccumulators of heavy metal. A large concentration of metal absorbed by mustard plant tissue could be a useful indicator of ground contamination. In this case, the mustard is the biological entity that harbors the metric you want to gauge.

In our neck of the watershed we can use the critters found within the nooks and crannies of our backyard streams as indicators of local environmental quality. The presence or absence of certain macroinvertebrates—tiny bugs, like mayflies, caddisflies and stoneflies—in our waterways would indicate good water quality. These six-legged “canaries in the coal mine” fare well in clean-flowing, highly oxygenated waters. If your stream is dominated by the presence of low-oxygen-tolerant bugs, midge larvae for example, this may indicate poor water quality. Keep in mind that the range of pollution and low-oxygen tolerance amongst aquatic organisms runs the gamut. Limnologists—those scientists who study freshwater systems—use as many indicator species as they can find in any given study area in order to make their final data more meaningful.

The example above shows how groups of living organisms can be useful to evaluate the environmental integrity of an abiotic or non-living factor like water using biotic or living things as a kind of barometer. There is another example that deals strictly with the biotic world. If we work on evaluating an area of true swamp—what ecologists call “flooded timber”—we can assess the general health of a forest patch within the GSNWR. Our scientists might start by looking for cavity-nesting birds in springtime. They would nest amongst the snags of dying and dead trees within the swamp proper. By noting the presence of tree swallows, red-

bellied woodpeckers, bluebirds, and great crested flycatchers displaying around tree holes, they would find an excellent sign of a vigorous swamp in good ecological order where food webs are functioning at levels necessary to support such diversity. In this case, it is the cavity-nesting birds that are the indicators. Conversely, if this same area

from human disturbance. In this example, it is the presence and absence of a variety of indicator species, both native and non-native, that allow us to weigh the ecologic health of the study habitat.

Indicator species are used as a proxy to diagnose the health of ecosystems. They can be very useful instruments for measuring everything from the health of cloud forests to judging ambient air quality. To a conservation biologist like me this is all very titillating stuff! (I'll give you a second to let the goose bumps settle.) Interestingly, some indicator species can tell us at a glance something about the geology where they live. For instance, certain plants change color depending upon the specific mineral conditions of the soil where they grow. The next time you are out running or biking, just look at the abundance of non-native plants along the edge of the road. This is a good indicator of poor soil quality and disturbance.

Researchers use field work, historical records, and other known information about plants and animals when interpreting which species make good indicators for measuring particular environmental variables. In turn, those studies help us make prudent decisions on setting limits for how much buffer a wetland requires to sustain normal background levels of biodiversity, or even how much salt we can spread on wintertime roads before surrounding water ways falter and drinking water is threatened. In the end,

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Eastern Bluebird (Sialia sialis) on Pokeweed (genus: Phytolacca). Credit: Blaine Rothausen.

was devoid of these animals, or if a negative indicator species like the European starling dominated the habitat, our scientists could conclude that our patch of swamp is not functioning to its maximum ecologic potential. Further analysis of the study area might focus on other bioindicators. If this same habitat had a rich population of obligate, wetland-loving plants—those that require wetland conditions to live—like cardinal flower, blue vervain, arrow arum, jewelweed and water hemlock, then the combination of these indicator species taken alongside the presence of starlings might lead to the conclusion that wetlands surrounding the swamp need greater buffers

GSWA Announces Changes to its Board of Trustees, Staff

GSWA extends a warm welcome to the newest member of our Board of Trustees, Astri Baillie. Astri joined the board in March 2011. As a former Council Member for Madison Borough, Astri brings with her a wealth of knowledge about local municipal government as well as a deep understanding of our watershed communities.

We are sorry to say goodbye to two board members who recently stepped down from their positions. A loyal supporter and frequent volunteer at our CMA, Robert

Crocco recently moved to Iowa where his wife will be pursuing a wonderful new career opportunity. Although no longer on our Board, longtime supporter and avid garden club member Pat Moody continues to support GSWA.

Recent months have also brought changes to GSWA's staff roster. We are pleased to introduce you to the following people each of whom play an essential role in our day-to-day operations.

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A Civil Action: Wine & Movie Night with Special Guest Jan Schlichtmann **Date, time and location to be announced**

Join us for movie night and meet renowned personal injury attorney Jan Schlichtmann. Schlichtmann's suit against W.R. Grace and Beatrice Co. over chemical contamination in Woburn, Massachusetts, became the subject of Jonathan Harr's award-winning, non-fiction exposé titled *A Civil Action*. In 1998, the story was adapted for the silver screen and starred actor John Travolta. The film *A Civil Action* follows the story of the families of children who died of leukemia after exposure to an illegally dumped, carcinogenic solvent known as trichloroethylene. Travolta portrays Schlichtmann, whose work on behalf of the victims' families eventually destroys

his reputation and his law firm. Despite these setbacks, Schlichtmann's efforts eventually lead the U.S. Environmental Protection Agency to file a successful, multi-million-dollar class-action against the polluting corporations.

Following the movie, Mr. Schlichtmann will lead a conversation about the film and his environmental work. Please visit www.greatswamp.org for updated event date or call 973-538-3500.

To register, please visit www.greatswamp.org and click on our secure Event Registration page, or call the GSWA Event Information Line at 973-538-3500 x22.

The Times They are A-changing at the CMA

by Hazel England, GSWA Director of Education and Outreach

Sometimes change is subtle, demonstrating itself in incremental alterations that only the keenest observer will notice. Sometimes change is overwhelming, with massive and substantial differences only the oblivious could miss. The work undertaken at GSWA's Conservation Management Area (CMA) this spring and summer most definitely falls under the latter variety!

We have already hosted ten corporate workdays and amassed 1,400 volunteer hours at the CMA this year. The sheer pace of habitat restorations is quickening.

More than 1,700 native trees, shrubs and herbaceous seedlings have been lovingly planted at the site in 2011. Many of these recent additions sport jaunty pink or orange scarves that show their 'new' status and allow us to track survivorship at the

CMA. Our native newcomers replace invasives from other lands that have been removed and turned into wildlife-enhancing brush piles. Although Japanese honeysuckle and multiflora rose do not provide much benefit while growing, they make wonderful overwinter homes for insects and small mammals when turned into dense-cut brush piles.

There are other obvious changes too. Two-thirds of the earthen trails around the CMA property are newly carpeted in a thick layer of mulch. This makes walking easier—paths are

better defined—more pleasant, and less muddy. These trail improvements were no mean feat. Several of our mulching workdays took place in June when sweltering temperatures of 90°F or above reigned supreme. So, enjoy the springiness under your step as you hike. It came at a high sweat-equity rate!

The biggest and most impressive change at the CMA this year is the recently completed trail expansion. That's right; GSWA has almost doubled the total trail length! Thanks to an easement granted by Harding Land Trust, the extension finally allows hikers to take in the site's beautiful swamp forest area also known as the Case property.

If you want to find the new CMA trail, just head toward Silver Brook. Once you cross the water, follow the trail onto the Case property where you

will wind your way between vernal pools, among mature oak, hickory and beech trees; and alongside an understory of sweet pepper bush and blueberry. Remember, the trail is still in creation. It's still getting haircuts, blazes and waiting for a final grooming. Even so, it is well-defined and completes a loop before returning you to the Silver Brook crossing. I invite and encourage you to walk our new trail system and see the results of a season of changes for yourself. Yeah, change is definitely good sometimes! 🌲



Corporate volunteers clear debris and put finishing touches on boardwalks along the new trail system at GSWA's Conservation Management Area, July 2011.

Chemical Assessment Program Begins on Upper Passaic River

by Laura Kelm, GSWA Director of Water Quality Programs

In February 2011, under the auspices of the Adopt-a-Stream program, Great Swamp Watershed Association began a three-year study of the water quality of the Upper Passaic River. This study was modeled on similar programs completed along Loantaka Brook (2005-2007) and Great Brook (2008-2010). Under this new assessment program, water quality will be sampled at Upper Passaic sites four times per year. Quarterly sampling allows us to capture seasonal variability in parameters, such as temperature and total dissolved solids.

Six sampling sites were set up throughout the reach of the Passaic River, including two along important tributaries. Four of the six sites are sampled annually by Lee Pollock as part of his macroinvertebrate study. One site was previously sampled by the former Ten Towns Committee. One site is a former USGS sampling site. Focusing on sites that have already been used to monitor water quality provides us with historical information that can be compared with observations taken in the present. Our sampling site located on Penn's Brook (behind Bernards High School) was chosen because it will allow us to measure the effects of stormwater runoff from nearby shopping centers.

Once we collect our water samples, we send them to a laboratory to be analyzed for concentrations of several parameters, including total dissolved solids, total suspended solids, and different forms of nitrogen and phosphorous. We also measure several parameters in the field including pH, dissolved oxygen, turbidity,



GSWA's chemical sampling sites along the Upper Passaic River.

water temperature, and stream flow. Taken together, all of these measurements give us a good idea of the health of the stream as it flows through the watershed.

Since we are still in the early stages of this three-year study, it is too soon to see trends in the data. However, the two rounds of sampling that have been completed and analyzed do give us some insight into a potential environmental issue. Penn's Brook exceeded the permitted New Jersey State Surface Water Quality Standards for total dissolved solids (TDS) and chloride in February 2011, and came very close to exceeding the standard for TDS again in May.

(continued on page 21)

Meet the New Neighbors

by Jim Northrop, GSWA Land Use Committee Member and Volunteer

I am a GSWA volunteer. Last week we had an early evening meeting. It was hot and sticky; dusk had come as the meeting adjourned. As I walked out of the GSWA building toward my car, I noticed a large black object up the hill near the woods. OMG—it was a large black bear sniffing her way toward our garbage cans. I remembered that the night before, we had been guests here at a GSWA volunteer appreciation party. Pizza was the main culinary attraction, and discarded pizza boxes (holding a few bits of uneaten pizza crust) would have smelled good even to me!

I froze, and the bear cautiously came closer. I know that black bears are fast runners, even though they are the largest land mammal in New Jersey—in fact, I am told they can overtake a running deer when they want to. I did not want to give the bear any cause for attacking me. I stood frozen and still.

A few steps later the bear stopped, looked at me and said, “I smell pizza. Can we share?”

By this time I was the only volunteer around—the others had gone home. I wished for someone else there who could assure me that the heat had not made me crazy. Could this really be a talking bear?!!

Then I heard the bear speak again.

“I have two cubs with me, and my job is to teach them how to live off the land. They know about berries and small succulent

plants, but they have never heard of pizza. I’m going to call them over. Please do not spoil their lesson by yelling at them or throwing something at us.”

I did not have to be told twice. I knew that a mother black bear will get very violent, if necessary, to protect her young cubs. So, I just stood there quietly and watched. Oh, how I wished I had brought a camera!

Ten minutes later, they had shredded the pizza boxes and feasted on every last crust they could find. The mother bear looked over at me and saw that I was not a threat, so she began a conversation.

“I’m new to these parts,” she said. “I grew up in Sussex County, but recently there’s been so much residential development up there. A lot of new bears have moved in too. I had to find a new home. I had to go where the people had

not yet thought to guard their garbage from curious, hungry animals like me. So, here I am, and I am loving it!”

Remembering that a black bear’s choice of home range is largely determined by the types and availability of food, I wondered what she liked to eat when no pizza crusts were handy.

“Well,” she said, “most of the time I eat plants—especially their berries, fruit and nuts—but, I also like insects. You know, finding an ant hill is really a treat.”

(continued on page 24)



Credit: [istock.com/jimkruger](https://www.istock.com/jimkruger).

What the Bugs Have to Tell Us: Results from the 2010 Macroinvertebrate Study

by Laura Kelm, GSWA Director of Water Quality Programs

Benthic macroinvertebrates are small invertebrate animals living on stream bottoms. They might be the larvae or nymphs of terrestrial animals, like dragonflies, or they may spend their entire lives as aquatic animals, like crayfish. Either way, these macroinvertebrates (MIVs) spend anywhere from a few weeks to several years living in a stream, often in the same general location. Furthermore, some MIVs are fairly tolerant of pollutants while others are very sensitive to them. Taking into account the time they spend in streams and the pollution tolerance of MIV species, you can get a good picture of water quality at a stream site by surveying the MIV community found there.

Dr. Lee Pollock, a retired Drew University professor, has been conducting an annual survey of macroinvertebrate communities around the Great Swamp Watershed for 10 years. Every spring, he

samples macroinvertebrates at 17 sites spread among Loantaka Brook, Great Brook, Black Brook, Primrose Brook, the Passaic River, and Indian Grave Brook (a tributary of the Passaic River). Using set indices, Dr. Pollock rates the health of each site and each stream from “good” to “very poor.”

Of the 17 sites surveyed in 2010, five ranked “good,” one ranked “fair,” six were “poor,” and five were “very poor.” While those rankings appear troubling, 10 of the sites actually improved or retained their rating from 2009 with gains seen at all sites on Black Brook, two sites on Loantaka Brook, and two sites on Primrose Brook. The seven remaining sites decreased in rating. The most significant decreases took place on Great Brook (two sites), Loantaka Brook (one site), and on the Passaic River (one site).

After looking at the site rankings for each stream over the last 10 years, they all showed some degree of variability, improving or degrading, from year to year. Black Brook and Loantaka Brook showed little overall change, while Great Brook showed a modest improvement since 2001. Sampling sites on the Passaic River and Primrose Brook also showed some improvement. The sites on Indian Grave Brook and one site on the Upper Passaic River have continually received high marks.

For detailed information about the annual macroinvertebrate study and 2010 results, check out www.greatswamp.org! 🌿



Dr. Lee Pollock and Dr. Caroline Maier collect macroinvertebrate samples from a local stream, May 2011.

Winter Roads Maintenance Workshop Wednesday, November 16, 8 to 10 a.m.

GSWA Offices, 568 Tempe Wick Road,
Morristown

Landscapers, maintenance crews, snow plowing contractors and other interested individuals are invited to join us for an in-depth discussion of best-management practices for winter road and driveway de-icing. Water quality testing that GSWA completed between 2005 and 2007 revealed especially high amounts of sodium and chloride in Loantaka Brook—two primary components of runoff from paved surfaces treated with salt. De-icing also allows sand to wash into streams where it lowers oxygen levels and harms plants and wildlife. This workshop will focus on technologies and techniques for reducing environmental damage while successfully removing snow and ice from paved surfaces.

Program is free for GSWA members. For non-members, the fee is \$10 per adult, \$5 for each child over 5, and \$30 per family. To register, please visit www.greatswamp.org and click on our secure Event Registration page, or call the GSWA Event Information Line at 973-538-3500 x22.

Upper Passaic *(continued from page 18)*

Certain levels of TDS naturally occur in water and result from ions dissolving into a stream as it runs over rocks and soils. Those ions can include magnesium, potassium, and calcium. Unnaturally high levels of total dissolved solids can affect aquatic animals' cells and can even cause death. Based on past work conducted by GSWA's former Director of Water Quality Programs, Kelley Curran, and Stream Team volunteer Roger Edwards, we know that sodium and chloride are the main components of TDS in our watershed. Not coincidentally, they also form the main components of road salt.

Although salt is applied to roads during winter months, TDS concentrations remained high in May because that salt tends to persist in the soil and is released slowly by rain showers. At the time this article was written in August 2011, we are preparing to collect our next round of water samples. We are quite interested to see how high the TDS level will be.

In the mean time, as you begin to think about the coming winter's snow, keep in mind that any excess salt you put down on your property eventually makes its way into our local streams. Try to use manual snow removal techniques, like shoveling, and apply salt sparingly where needed. The aquatic life will thank you! 🌿

Indicator Species *(continued from page 15)*

everything you see around you on a saunter in the woods are potentially indicator species. Take enough time to become intimate with a plant or animal's life history, come to understand the upper and lower limitations of its natural potential, and you will know something about the place or places it calls home. 🌿

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What A Difference Two Years Make: A Round-up Of BioBlitz 2011

by Hazel England, GSWA Director of Education and Outreach

What do the great blue heron, the blue-spotted salamander and the blue flag iris all have in common? Give up? No, this is not the beginning to a bad joke, but a list of three species with the distinction of appearing at both our 2009 and our 2011 BioBlitz events at Great Swamp National Wildlife Refuge (GSNWR).

Great Swamp Watershed Association (GSWA), in partnership with GSNWR and the Friends of Great Swamp, held these two intensive twenty-four hour surveys at the Refuge to focus a spotlight on local biodiversity. During both, professional biologists, interested amateurs, staff, and assorted raggle-taggle interns and volunteers donned their Bioblitz t-shirts, broke into survey teams, and fanned out across the swamp in search of their quarry. Each team was tasked with instructions to find and report on one type of wildlife (scientists call this a taxon), and each set out to comb every nook and cranny of the Swamp hoping for a glimpse of one of their target plants and animals. Upon returning to BioBlitz base camp, they brought with them a wealth of scientific observations and data.

If it flew, grew, crawled, walked, or swam, and it was spotted by our scientists, GSWA tallied it and added it to our BioBlitz database. You might think that a similar

group of people, searching with similar vigor on a similar day only two years apart might see similar species, but you'd be wrong! In a Bioblitz, seeking out wildlife is only half the fun. The other half is trying to figure out why a particular species appeared in such large numbers in 2009, but was absent in 2011. Did you search in different places each time? Was the time of day different? Did you have more team members in 2009? Was last winter rougher than usual? Was this past spring wetter? All of these factors, and many others, play a part in determining why our teams saw a particular species two year ago that did not reappear this year.



Birding expert Emile DeVito listens for identifiable songs during an early morning BioBlitz excursion into Great Swamp National Wildlife Refuge, June 2011. Credit: Ari Kaufman.

BioBlitz 2011, which was held in late June, took place almost a month later in the year than BioBlitz 2009 which was held in early May. This means that seasonal environmental conditions and the behavior of some wildlife species were quite different between years. For instance, the warblers that the 2009 BioBlitz birding team described as “dripping from every tree,” did not make themselves known to the same team in 2011. Why? Because the birds from 2009 were still migrating to their breeding grounds throughout the Northeast region. The relative absence of warblers in 2011 suggested that, by the month of June, the birds had already finished their migration

and established nesting territories. Similar circumstances held between years for many bird species. While almost 100 different bird types were spotted in 2009, less than 80 species, most of them resident (non-migratory) animals, appeared on our list in 2011. Despite these discrepancies between 2009 and 2011, adding together overlapping observation tallies from both years gives us a more complete picture of the Great Swamp's bird species.

Differences between Bioblitz years also turned up in the insect world. In many cases the changes observed among these taxons related to composition of our survey teams rather than seasonal variation in behavior. With the number of insect species being so vast, most biologists who study them specialize in studying a particular sub-group of animals. Since the same scientists are not be present at every BioBlitz, the composition of our insect survey team changed from event to event. Changes in team composition result in changes in our observation list because different scientists will observe and identify different types of insects.

When we added the number of insect species observed in 2009 and the number observed in 2011, our cumulative species count was huge. As a result of survey team composition, there was almost no overlap in observed insect species between years, and only a few insect types species were observed at each event. In 2009, bee, ant, and moth experts identified about 240 different species in their designated insect families. In 2011, our specialists studied crane flies,



*An insect specimen collection tray at BioBlitz 2011.
Credit: Ari Kaufman.*

micro moths, and ground beetles instead. About 100 different species of these animals were observed. The insect count GSWA has accumulated over the course of two study years is amazing. Even so, we have barely scratched the surface of true insect diversity at the Refuge and more work will be required in this area. This year's insect specimens will continue providing information well beyond what we have recorded. Each one will be housed at the Philadelphia Academy of Sciences and will be made available to researchers for future study.

While snapshot surveys like GSWA's BioBlitz are easily written off as too hit-or-miss to give a true picture of the wildlife inhabiting an area, there is real merit in having a group of experts search the same place at the same time for the same reason! The refuge—in all its 7,700 acre glory—does not easily reveal its secrets. Nevertheless, a close study of the data does reveal which species are more likely to be seen in each Refuge zone. Just like the blood test taken

(continued on page 25)

New Neighbors *(continued from page 19)*

“I also like mice and other small mammals, and delicacies like the white-tailed deer carcass I found the other day.”

“I do not come across those tasty bits very often, but I am not choosy—any fresh roadkill will do just fine. But, I am getting a bit spoiled from so much food. You humans call it garbage, but I think it’s great!”

“My cubs have begun to associate garbage with people—not that they want to actually eat people, but if they smell humans around they assume that some tasty ‘garbage’ is nearby.”

“Sometimes this creates a problem. When my cubs approach, people get frightened. They think the cubs will try to make them their meal. You see, sometimes bears are completely misunderstood.”

I felt sorry for the bear and her cubs. After all, humans also get into trouble by misunderstanding the intentions of others.

“I am sorry you can’t be spared this grief,” I said, “but you should know that there are conservationists around who want to end the misunderstanding between people and bears. They get other people to stop leaving their food and garbage around outside as ‘bait’. In fact, in New Jersey, people can be punished with a fine for feeding the bears.”

“That’s very kind,” she said with a smile, “except that educating will mean no more pizza!”

“My favorite food is not really pizza, anyway. I love finding a good-sized beehive. You see, my fur is bee proof, and the occasional sting on the nose is well worth the sweet honey I usually find inside.”

About then, I noticed a very large shadow moving toward us from the woods. The black bear noticed it, too, and told me that it was

her mate coming from another part of the woods. He was coming to investigate all the commotion.

The appearance of the second bear did not surprise me much. You see, I had read once that black bears have a remarkable sense of smell, and that they have been known to smell a source of food more than two miles away. They are also known for their good hearing and can see very well; although, they are said to be a bit near-sighted. Their ability to see in color helps them forage for those fruits and berries they like so much.

As her mate approached, my new friend said, “I have to go.”

“My mate gets very upset when we do not save some good food for him, and my cubs and I have licked this area clean!”

As she turned to leave, I waved her a goodbye and wished her family a safe journey. 🐾

No Water, No Life Sunday, November 6

Clarence Dillon Library, Bedminster, NJ

Water, not oil and gas, is the crucial scarce resource on our planet. Five billion people worldwide lack good water, and this number will rapidly multiply without concerted action. Alison Jones, dynamic Project Director for the international NO WATER NO LIFE organization, will engage us and challenge us. Presentation takes place on Sunday, November 6 at 2:00 p.m. \$5 admission, pay at door. Please enroll in advance. Call 908-234-2325 or write to ref@dillonlibrary.org.

BioBlitz *(continued from page 23)*

at your annual physical, BioBlitz data acts like a benchmark or baseline. Specific ailments and broader patterns of health can be established when cumulative results are studied over a long period. Given time, a series of BioBlitz events may turn up an unexpected or unusual specimen of note, or a species expected, but not seen, could point to a change in environmental conditions.

A brief round-up of the 2011 BioBlitz does little justice to how great it was to see more than 50 professionals and interested amateurs work alongside volunteers and members of the public. Everyone in

attendance, whether they travelled into the field or attended one of our 18 educational programs, learned much about the plants and animals that call GSNWR home. And just think, all of this amazing biological diversity lives right here in our own backyard.

For more insight into BioBlitz 2011 and all the activities involved, please check out our BioBlitz photo gallery located at www.flickr.com/photos/gswa. A complete list of species sighting for BioBlitz 2011 will appear after September 6 on GSWA's website located at www.greatswamp.org. 🌿

From the Desk *(continued from page 5)*

you register early for Breakfast Briefings, environmental education programs, teacher workshops and movie nights so you do not miss out! You can register online at www.greatswamp.org.

Our 30th Anniversary Gala takes place on Thursday, October 13, at the Westin Governor Morris in Morristown. Make sure you save the date! You can even RSVP on line.

P.S. Since writing this letter, Hurricane Irene swept through the east coast. The full effects are still being felt. Many people lost power, lost trees, and even lost belongings and homes. Mother Nature reminded us just how powerful she is and how much respect she deserves. While I don't think there is anything more we could have done to minimize the devastation and havoc, I think it is a strong reminder of how important it is to protect our rivers and floodplains and prepare for changing weather patterns. 🌿

Board and Staff Changes *(continued from page 16)*

Laura Kelm joined our team in April 2011, stepping into the role of Director of Water Quality Programs formerly held by Kelley Curran.

Debbie Rice came onboard as our Office Manager in May 2011.

Steve Reynolds joined the staff in June 2011, stepping up as our Director of Communications and Membership following the departure of Debra Dolan.

Sue Levine stepped up as our Director of Finance following the departure of Sharon McCann in July 2011. 🌿

Interested in volunteering?

Fill out our volunteer profile at www.greatswamp.org/VolProfile.htm, or e-mail volunteer@greatswamp.org.

Welcome New Members

Special thanks to the following donors who became members of GSWA between February 5, 2011 and August 25, 2011:

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Mr. & Mrs. Olin Friant	Ms. Patricia Neil	

GSWA also thanks those new members who wish to remain anonymous.

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GSWA would like to thank the following members and contributors who gave so generously to our 2011 Chairman's appeal:

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