

WATERSHED

A Newsletter of the Wood-Pawcatuck Watershed Association

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SUMMER 2006

TNC effort targets forestlands and headwaters of the Wood-Pawcatuck

By Lee Alexander and Jana Porter

Reprinted from The Nature Conservancy, RI newsletter

Clear, cold streams tumble over rocks, through unspoiled woodlands and past stonewalls, mills and farms as they flow to the Pawcatuck River. Fishermen cast flies for elusive brook trout in the largest of these tributaries, the pristine Wood and Queen Rivers. Further downstream, on the Pawcatuck itself, laurel thickets, pileated woodpeckers, river otter and majestic white cedar swamps form the backdrop of a canoeist's paradise.

Scientists from The Nature Conservancy have identified the Pawcatuck River system as one of the most exceptional freshwater resources from Maine to Maryland. This network of rivers and streams boast alewives, vulnerable floodplain forests and freshwater mussels that act as water-purifying filters. Rare plants and dragonflies thrive in nearby bogs and fens. Groundwater connected to the Pawcatuck River system supplies

pure, fresh drinking water for most of southern Rhode Island. Yet South County is the fastest growing region in the state, and these rivers, wetlands and groundwater reservoirs are vulnerable to impacts from increasing development. Conservation of the Pawcatuck River system is a top priority for The Nature Conservancy, but the window of opportunity to protect it is rapidly closing.

"One of the reasons these rivers are still so pristine is their forested watersheds," says Lee Alexander, South County Landscape Manager. "Rivers reflect the condition of the lands that drain into them." Much of the Pawcatuck watershed is still forested, but when developments replace forests, even a modest amount of new development can have a big impact on water quality. New development adds to competing demands for water as well.

In response to these challenges, The Conservancy is embarking on its largest effort

ever to protect key forestlands in the Pawcatuck Watershed. Headwater regions, where streams and rivers begin, are essential to conserve, because what happens there - good or bad - affects water quality and aquatic communities downstream. Because the Wood and Queen Rivers are the Pawcatuck's largest and most pristine tributaries, the Conservancy is focusing its headwaters protection efforts in those watersheds. In West Greenwich and Coventry, the Conservancy is racing to safeguard the largest remaining unprotected links of forested headwaters where the Wood River begins. These efforts represent the Rhode Island Chapter's largest land conservation projects ever.

In the Queen River basin, past conservation efforts by The Nature Conservancy, Audubon Society of Rhode Island and generous donors protected a quarter of the lands in the watershed. Still, development of the remaining forest lands would likely result in de-

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From the Executive Director

This West Greenwich resident is grateful to neighbors who voted to support open space.

As a resident of West Greenwich, and someone who cares deeply about preserving open spaces to protect water supply, I'd like to express my gratitude to the Town of West Greenwich, The Nature Conservancy, and my fellow town residents who turned out in droves to vote for an \$8 million open space bond to preserve open space in town.

During a Special Financial Town Meeting that was held on April 26, 2006, West Greenwich residents voted 98% in favor of the measure, the largest municipal land conservation bond ever in RI, according to The Nature Conservancy. The local bond funding will be matched with state, federal, and private funds to purchase a combined 1600 acres of deep untracked forest. The land is within the Wood River watershed, and surrounds its headwaters. In terms of how watersheds work, where you're only as good as what's upstream of you, this is a major acquisition, and highly strategic, toward the goal of preserving drinking water quality.

This forward-thinking act on the part of town administration, local preservationists, and the voters, demonstrates overwhelmingly the desire of the town to preserve its rural character, and to be proactive in the protection of its natural resources.

Congratulations to all who made this happen.



Harvey C. Perry accepts The Salomon Award at WPWA Annual Meeting

It is truly an award-winning year for Harvey C. Perry II of Westerly.

On May 25th at the WPWA Annual Meeting, Harvey was presented with "The Salomon Award," which is given annually to a municipal employee or non-profit leader



who demonstrates exemplary regional efforts to preserve, protect and conserve the Wood-Pawcatuck Watershed.

Harvey Perry is very deserving of this award. As president of the Westerly Land Trust, he has grown the Trust's holdings to over 1000 acres in just seven years, nearly 800 of which is in our watershed, and along the Pawcatuck.

Harvey's love for the river and his town was not lost on the Greater Westerly Pawcatuck Area Chamber of Commerce either. In June, he was awarded their prestigious Citizen of the Year award.

Harvey and his wife Sarah have been WPWA members for many years. This summer we are working more closely with Harvey and the Westerly Land Trust to investigate brook trout habitat on Mastuxet Brook in Westerly.

Congratulations to Harvey on this timely recognition.

In memory of Peter Brownell

All of us at WPWA are saddened by recent news of the passing of long-time member and volunteer Peter Brownell of Exeter.

Mr. Brownell had monitored the

Queen River on his property for eight years. He was committed to preservation of the Queen River, putting a good portion of his property into the state Forest Legacy program.

Mr. Brownell generously allowed WPWA to conduct several research projects from his property. He was keenly interested in managing for native brook trout, engaging Dr. Saila in many conversations about fisheries management projects.

Mr. Brownell was an avid outdoorsman, and enjoyed taking his dog on many hunting and fishing outings.

As a final tribute to his many outdoor interests, his family requested that donations be made to WPWA in his memory.

He will be missed by all who enjoyed his company. We extend our deepest sympathy, and our gratitude, to his family.

Volunteers needed to scout invasive plant

WPWA is looking for volunteers to scout river stretches in search of invasive Purple Loosestrife.

Training sessions will be offered at WPWA on July 24th, from 4 to 5 pm, and 6 to 7 pm, to teach plant identification, effects on wetland ecology, and biological controls in use to stop the spread of the plant.

Trained volunteers will be assigned sections of the Wood and Pawcatuck rivers to paddle in search of stands of this troublesome plant. WPWA will provide kayaks for volunteers to use.

Call 401-539-9017 or email denisep@wpwa.org to sign up for one of the training sessions.

Summer science summed up: Hydro-ento-botan-ology

Through the generous support of the Forest and Frances Lattner Foundation, which provided a grant of \$50,000 to fund our scientific studies this year, WPWA continues an aggressive slate of investigations through the fall.

Under the guidance of Dr. Saul Saila, WPWA Trustee and chair of the Science and Technical Committee, and the field direction of program director Denise Poyer, WPWA has developed integrated approaches that connect the minimum requirements for aquatic life in stream habitat, to water quality and water supply availability in our watershed.

As you will read, temperature of surface waters, and in particular low-order streams, as a critical aspect of habitat and water quality, is increasingly emphasized in our studies. Therefore, stream temperature logging, and looking at what this information tells us about the viability of the ecosystem, underscores our program. This year we will look closely at temperature along the Queen watershed, a vulnerable system that we anticipate will be the target of water users and suppliers in the coming years.

Temperature, Quality and Flow

I-button continuous temperature loggers will be deployed on our around June 30, and retrieved on or around September 30, on the Queen River and Mastuxet Brook.

On the Queen, we will be conducting an intensive temperature study to locate key areas of groundwater inflow. Up to 25 i-

buttons will be deployed at selected sites at the headwaters in West Greenwich, to the lower reaches in Exeter and South Kingstown. Data collected will be presented in support of our position on minimum flows and water supply protection in the basin.

On the Mastuxet Brook in Westerly, a more targeted temperature study will aim to confirm adequate parameters for cold water habitat. Four i-buttons will collect continuous stream temperatures to allow us to determine the habitat is cold enough to support native brook trout.

Under the URI Watershed Watch program, weekly monitoring of 30 select sites will begin on May 18 and continue to October 26. Volunteers will collect samples for nutrients, bacteria, pH, and chlorophyll, as well as measure secci depths, temperature, and dissolved oxygen. Laboratory analysis will be conducted at URI laboratories.

Short-term continuous data logging will take place above and below the three dams in Shannock and Kenyon over two week intervals during the summer. Data collected will be used in the analysis of fish passage alternatives as part of the Shannock Fish Passage Feasibility Study. A measurement of temperature, pH, specific conductance, and dissolved oxygen will be taken every 15 minutes by the loggers while submerged.

Invasive Species Control

This is our second year of a project in conjunction with URI Department of Plant Sciences,

and with funding from the RI Rivers Council, to control the invasive species purple loosestrife using biological methods. Specifically, the release of *Galerucella* beetles into the loosestrife stands aims to reduce plant vitality and allow native species to repopulate. Partners for



Michelle Hetu checks out loosestrife in Carolina.

WPWA on this project are Michelle Hetu, our second-year URI Coastal Fellow, and Brian Allen, a volunteer and trained

Watershed Steward.

The second year activities include an assessment and documentation of impacts to plants from last year's release; the release of additional beetles in July; and, the scouting of river segments during purple loosestrife blooms to document locations for future releases. Volunteers will be recruited and trained to identify and map the plants' locations. Follow-up assessments will be made in late-September.

Fish assemblages and habitat

We will be looking at fish assemblages on two sites on the Queen and Beaver rivers as indicators of changes to the habitat.

Brook trout at select sites on the Queen and Beaver River will be sampled to determine if *Margaritifera margaritifera*, a fresh water mussel of concern in the watershed, is breeding. The trout will be collected and examined for

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Lisa Gould returns to her North Carolina roots

Excerpted from *Botanist sets sights on re-planting Southern roots*, By Arline A. Fleming, Providence Journal Staff Writer, June 21, 2006

The senior scientist of the Rhode Island Natural History Survey has retired, sold her house, and is returning to Winston-Salem, N.C. where she was raised.

She and her late husband Mark, also a biologist, met and married and raised their two daughters here. All the while, Lisa studied native plants and led walks and classes for groups ranging from the Nature Conservancy to the Rhode Island Audubon Society. She knows the area's wildflowers, coastal plants, the state's lichens and seaweeds and insects. Knows them well.

In fact, she wrote the book on many of them -- though she likes to point out that all who contribute to a project get credit.

But she is an author, coauthor or editor of more than two dozen books and articles. One of her major works came in 2000, *Coastal Plants from Cape Cod to Cape Canaveral*, a project she took on with the late Irene H. Stuckey, her friend and wildflower walk colleague.

Stuckey, a Georgia native, was professor of plant physiology at the University of Rhode Island for many years, joining the faculty in 1937. She was a mentor to Gould -- the older woman perhaps seeing herself in the younger scientist -- and they both spoke with a trace of their Southern roots.

"I'm really going to miss the

old stone walls, and the rocks, and the New England landscape," Gould said, a longtime fan of the area's ruggedness, and its gentleness as well.

On wildflower walks, Gould is known to recognize invasive plants, and then underscore their good side. Bull briar, she once pointed out on a walk through the Kimball Wildlife Refuge, Charlestown, is prickly, but it is also the first sign of spring.

Gould earned her bachelor's degree in Biology from the University of North Carolina, Greensboro, and came to Rhode Island in 1969 to work on her master's degree in Zoology at URI. She met her husband there when the two of them helped organize the 1970 Earth Day activities.

He eventually joined the faculty at Roger Williams University, but died at age 53 after a heart attack. Earth Day RI awards a scholarship in his memory each year.

Last Thursday, she said goodbye to her professional colleagues at a dinner at URI's W. Alton Jones Campus where her many accomplishments -- from being a founder and trustee of the Meadowbrook Waldorf School to being a founder and first president of the Rhode Island Wild Plant Society -- were listed.

A newly established Lisa Lofland Gould Native Plant Program Fund has been set up as a collaborative effort by the Rhode Island Natural History Survey, the Rhode Island Wild Plant Society and URI's College of the Environment and Life Sciences. The

fund will help sponsor lectures, walks and workshops of scientific and educational value.

For more information about the fund and programs, call 874-5800.

Forestlands (Cont'd from Page 1)

graded water quality in both the Queen River and its groundwater reservoir. The Conservancy is making a renewed effort to protect the most strategic of these forested lands before it's too late.

Landowners along the Pawcatuck River and its tributaries are essential to a second critical strategy for river conservation: preserving a natural buffer of trees, shrubs and native leafy plants growing right down to the water's edge. These natural buffer lands function as protective blankets, filtering sediments and pollutants from run-off in rain water before they reach a river or stream. For that reason, streamside homeowners are among the Conservancy's most important allies in maintaining clean and healthy waterways in the Pawcatuck River system. The Conservancy also depends on partnerships with local land trusts and groups like the Wood Pawcatuck Watershed Association to maintain the natural condition of shoreline buffers as a last line of defense for these outstanding rivers.

"Accessible recreation areas, a density of rare species and naturally clean drinking water really make the Pawcatuck watershed exceptional," stresses Alexander. "The time to pull together to protect these rivers is now."

Prioritizing Protection of Vernal Pools in the Queen

Frank Golet, PhD.

Vernal pools are widely recognized as critical habitat for a variety of vertebrates and invertebrates. In recent years, their protection from human impacts has been a major conservation and regulatory goal throughout New England. These valuable wetlands are increasingly at-risk as a result of their small size (often <0.25 acre), isolated nature, and seasonal drying, which may make them difficult to identify at certain times of the year.

Recent research has shown that the presence, abundance, and diversity of amphibians breeding in an individual vernal pool may be influenced by both landscape characteristics and features within the pool itself. Since 1997, scientists at the University of Rhode Island's Department of Natural Resources Science (NRS) have identified many of these key characteristics and used them to develop methods for assessing the suitability and potential productivity of individual pools for breeding wood frogs (*Rana sylvatica*) and spotted salamanders (*Ambystoma maculatum*). Much of this research has been conducted in the Pawcatuck River watershed. Among the most important factors affecting the presence and reproductive effort (number of egg masses) of these species were the hydroperiod, or duration of inundation of a pool, and the amount of forest cover, the extent of residential development, and road density within varying distances from the pool. During the last 5 years, NRS faculty and

graduate students have developed two rapid assessment methods for estimating a pool's long-term hydroperiod—one based on plants growing in the deepest zone, and the other based on features such as basin depth, water chemistry, geology, and tree canopy cover. These accomplishments are highly significant because (1) hydroperiod appears to be the single most important within-pool factor controlling productivity of pond-breeding amphibians, and (2) these methods eliminate the need for prolonged monitoring of pools for hydroperiod determination.

Currently, vernal pool protection is largely a reactive process; wetland regulations are applied when vernal pools lie in the path of proposed land use changes. And vernal pool regulation, even if it is successful, may do little to maintain pond-breeding amphibian populations unless a way can be found to protect suitable terrestrial habitat around the pools as well. Limited funds preclude the acquisition of all upland habitats needed to sustain pond-breeding amphibian populations. What is urgently needed is a watershed-scale plan that identifies those specific geographic regions that support both highly productive vernal pools and high-quality upland habitats and that prioritizes these areas for protection. NRS scientists have generated the tools to accomplish such habitat assessment and prioritization; this workplan describes how these tools will be applied to develop a vernal pool acquisition plan at the watershed scale, using the Queen River watershed as an example.

The overall objective of this project is to identify specific

"hotspots," or geographic areas that are capable of supporting unusually high productivity or an unusually diverse community of pond-breeding amphibians, as a basis for prioritizing land protection efforts.

Specific objectives are (1) to use hydroperiod estimation models, along with GIS analyses and both new and existing field data, to rank individual pools, pool clusters, and specific geographic areas (hotspots) in the Queen's River watershed in terms of their probable contributions to pond-breeding amphibian abundance and diversity; (2) to recommend for immediate protection specific hotspots, as well as upland-forested areas linking such hotspots to each other and to currently protected lands; and (3) to explain how future efforts to develop watershed-based vernal pool protection plans might be streamlined.

As a result of the project, state and federal agencies, municipal governments, land trusts, and conservation organizations will better understand which specific areas of the Queen's River watershed need protection if pond-breeding amphibian populations and other vernal pool fauna are to be maintained. This information will help to guide open space acquisition, land-use management, and preservation of biodiversity. Results should be of particular interest to the DEM Division of Fish and Wildlife as it begins implementing its statewide habitat conservation plan under the State Wildlife Grants (SWG) program. At the same time, this project will help the landowners of the Queen

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Clean Water Action lauds 2006 legislative accomplishments

At the close of the 2006 legislative session, CWA praised the RI General Assembly for passing laws that protect Rhode Island's environment.

"This year the Assembly passed measures to reduce diesel pollution, prevent the release of mercury pollution from dental offices, and to ban electronic waste from the landfill," said Sheila Dormody, RI director of Clean Water Action. "Future generations of Rhode Islanders will be grateful for the many benefits of these accomplishments."

Following are the green bills that passed this session:

Dental Mercury Pollution Prevention Act

"Silver" fillings are made of a combination of metals including mercury, which becomes an environmental problem when washed down the drains at dentists' offices. Uncontrolled, it is sent to the sewage treatment plant, where it can be released to the air and water upon incineration or landfilling of sewage sludge. Mercury accumulates in fish, and can endanger people and wildlife that eat the fish. According to the EPA, dental offices in the US use 34 tons of mercury per year, making them the largest source of mercury pollution in wastewater.

After only one year, the Narragansett Bay Commission's program to reduce the release of dental mercury has been able to measure significant improvements in decreases to their mercury load. This legislation expands the program statewide.

Electronic Waste Prevention, Reuse and Recycling Act

Computers and other discarded electronic equipment contain lead, mercury, and other toxins that can damage kidneys, nervous and reproductive systems, disrupt hormones, and harm developing fetuses. The bill bans electronic waste from our landfill and requires DEM to develop a plan for its collection, recycling, and reuse.

Anti-Idling Act

Diesel exhaust can trigger asthma and heart attacks. This legislation bans excessive idling of diesels, especially in circumstances where it poses a threat of exposure, like school buses waiting to board. Connecticut and Massachusetts have implemented similar policies.

Banning of PBDEs

PBDEs, flame-retardants added to many products, can cause developmental problems in children. This bill prohibits the manufacture and sale of products containing more than 0.1% of pentaBDE or octaBDE and more than 1% of the "deca" mixture. It also requires DEM and DOH to review the use and effects of decaBDE

Mercury Switch Collection Law

This bill strengthens the Mercury Reduction and Education Act's mercury switch collection program by requiring auto manufacturers to pay a \$5 bounty for mercury switches collected from cars. RIDEM estimates that 602 lbs. of mercury is contained in cars registered in RI. Three other states have passed similar laws.

Vernal Pools *(cont'd from page 5)*

River watershed to appreciate the

important role that their individual parcels may play in maintaining vernal pool wildlife.

The major products will include a GIS database of vernal pools in the Queens' River watershed, including data on attributes such as estimated hydroperiod, extent of forest cover within certain distances of each pool, parcel information and landowner names and contact information, and other landscape metrics. The final project report will (1) identify high-priority pools, high-priority pool clusters, geographic regions where high-priority pools or pool clusters are surrounded by suitable forested habitat (i.e., pond-breeding amphibian hotspots), and those areas where such pools or clusters lack suitable surroundings but where forest might be restorable; and (2) recommend protection of specific hotspots and upland forest areas linking such hotspots to each other and to currently protected lands, as well as how to streamline future efforts to develop vernal pool protection plans at the watershed scale.

**** SAVE THE DATE ! ****

40th Annual Conference of the New England Environmental Education Alliance

"Connecting to the Environment: Telling the Earth's Story"
September 29 to October 1, 2006

Educators from six New England states will converge in RI for a series of field trips and workshops, and an exciting keynote address by Dayna Ayers Baumeister of the Biomimicry Guild entitled "Bringing environmental

WPWA CANOE AND HIKING GUIDES

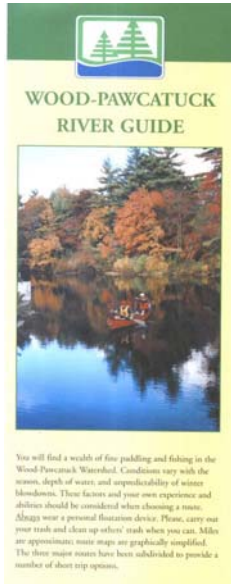
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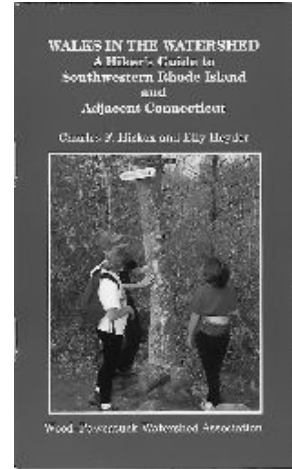


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education to design and engineering." Evening entertainment is included on Friday and Saturday.

The conference is open to all, but geared toward teachers and environmental educators.

Hosted by the RI Environmental Education Association. See www.neeea.org/conference for rates and information.

Summer Studies

(cont'd from page 3)

the presence of glochidia on their gills, then released back into the habitat.

Also on the Queen, we will conduct a temperature study to locate pockets of refugia (cold water pools) that are favorable to salmonids. We will walk sections of the Queen River, employing a

data logger and temperature probe to identify sudden changes in water temperature that could be groundwater influence. This will take place at the end of July.

On Mastuxet Brook, we will be confirming the presence of native brook trout in the system, which is believed to support a population. In late summer we will select two sites on the Brook where brook trout are likely to be found, and sample there to determine if in fact they are present.

Macroinvertebrate sampling will be attempted at the Shannock and Kenyon dam areas to provide data for the Shannock Fish Passage Feasibility Study. However it is not clear that an appropriate sampling site will be found at each location. This will be determined in the field. If possible, we will select sites to sample macroinvertebrates above and below the

Shannock dams.

Our study of anadromous brook trout habitat will continue later this summer into early fall, on Redbrook Stream on the Lyman Preserve. WPWA and Trout Unlimited volunteers will conduct habitat assessment studies in September. Staff members from Mass DEP will attempt to recover previously tagged trout through October. A third round of brook trout tagging, using DST Micro loggers, may take place in September, to bring the total number of tagged fish in the system to 30. Recovery of a tagged fish, though uncertain, could provide new information on the behavior of the species in salt water. Funding for the tags has been provided in part by the Mary Dexter Chaffee Foundation.

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Wood-Pawcatuck Watershed Association



The former Knowles Mill in Shannock, demolished in May, will become the site of a park and portage on the river.

Opinions expressed in *Watershed* are not necessarily those of WPWA, its Board of Trustees, or staff.

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