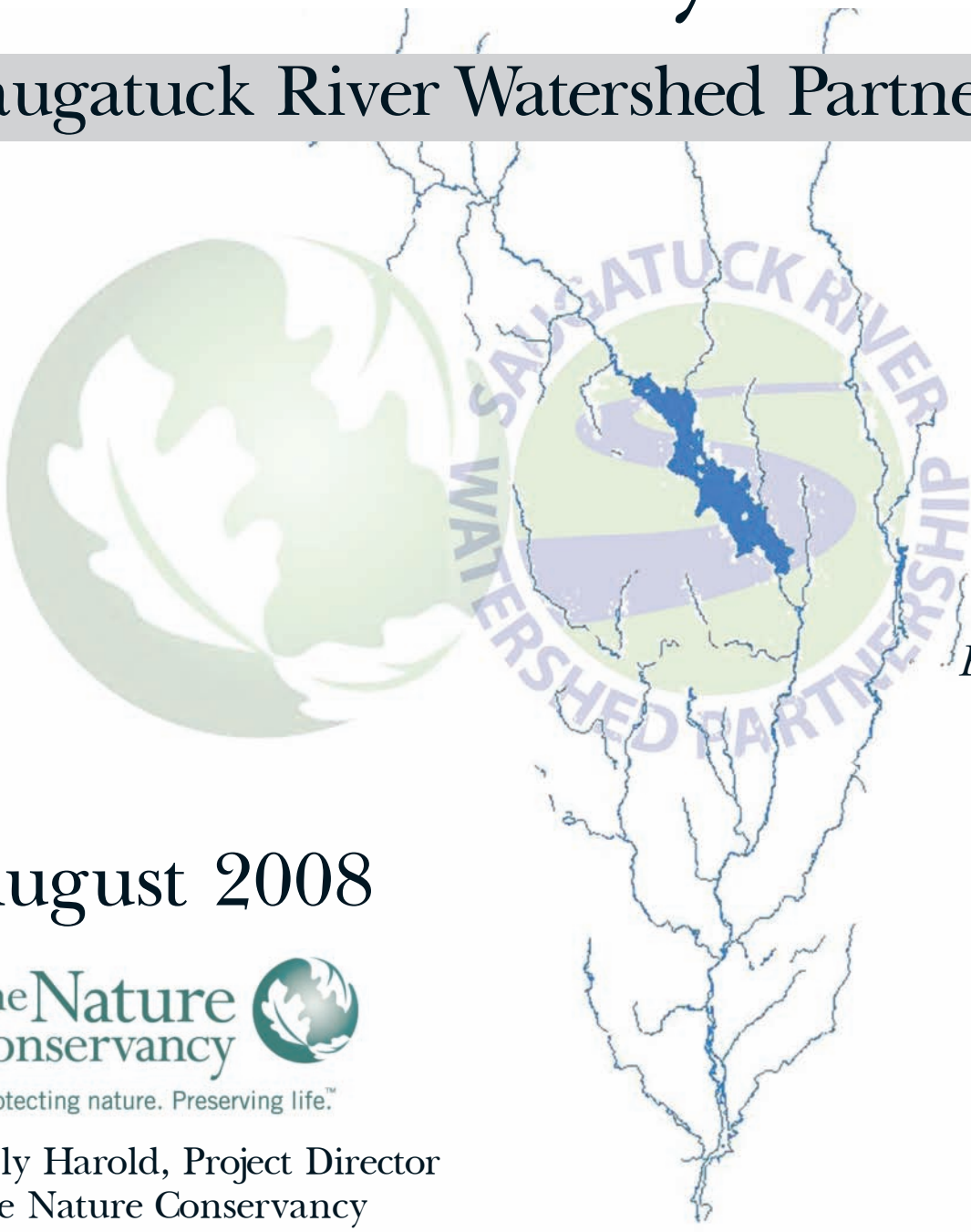
Second Report of

The Nature Conservancy's

Saugatuck River Watershed Partnership



Bethel
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Weston
Westport
Wilton

August 2008

The Nature Conservancy
Protecting nature. Preserving life.™

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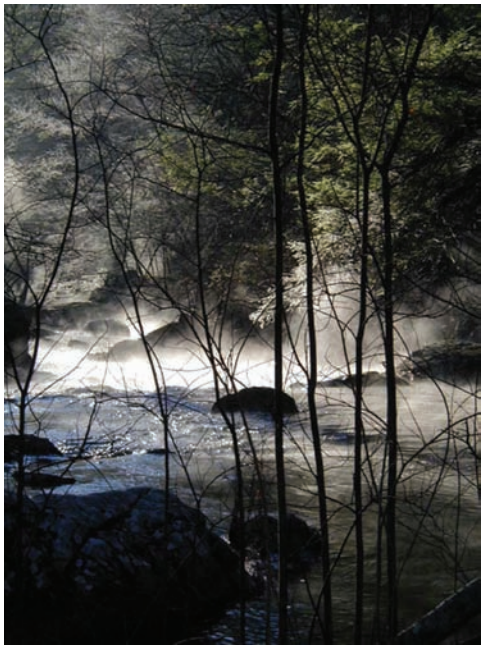

Mission Statement

The goal of the Partnership is to protect and enhance the health of the watershed by working collaboratively to link, maintain and restore habitats which support healthy populations representing the natural biological diversity of the watershed system.

"When we save a river, we save a major part of an ecosystem, and we save ourselves as well because of our dependence - physical, economic, spiritual - on the water and its community of life."

Tim Palmer,
The Wild and Scenic Rivers of America

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We're growing! Since our last report, issued in March of 2006, over 100 volunteers have helped us with projects across the watershed!

We secured federal grants totaling $114,000 and raised an additional $89,500 in required match. ($30,000 of this is volunteer hours.) Additionally, private foundations donated $55,000 in support of the Partnership and we received a $500 grant from Patagonia in Westport.

A Message From Sally Harold Nature Conservancy Project Director

One might not expect to find such a healthy watershed just an hour outside of New York City. The Saugatuck River Watershed is a Fairfield County jewel with nearly a third of its land under conservation ownership. The Nature Conservancy initiated a year-long planning effort for the watershed in 2005 with funding from the Long Island Sound Futures Fund. Federal, state, regional and local stakeholders were brought together to develop a conservation action plan and forge a watershed partnership. The partnership's purpose is to protect and enhance the health of the watershed through collaborative efforts to link, maintain and restore habitats supporting healthy plant and animal populations, natural communities and ecological processes representing the natural biological diversity and healthy functioning of the watershed system.

In April 2006, the chief elected officials of the eleven municipalities in the watershed signed the Saugatuck River Watershed Conservation Compact, which acknowledged the economic, social and environmental value of the landscape, and indicated their commitment to work together across town boundaries to help protect the health of the river system. Each chief-elected official appointed a municipal representative who would serve as liaison at partnership meetings to represent the interests of their town while helping to direct the Partnership's efforts.

The Saugatuck River Watershed Partnership also includes representatives of the CT DEP, CT DPH, USGS, USDA's Natural Resources Conservation Service, the Southwest Conservation District, stakeholder groups including Trout Unlimited, Sound Cyclists, Earth Place, Sasco Brook Pollution Abatement Committee, and interested others. The Watershed Partnership engages volunteers from throughout the watershed and beyond in a variety of projects, including summer stream monitoring walks, fish trap and fish counter monitoring, macroinvertebrate collecting, project development and our monthly planning meetings.

Planning meetings are open to the public. They are usually held at the Weston Town Hall on the 4th Tuesday of the month, from 9:00-11:00 am. We work together to develop and implement projects that protect and improve the health of our watershed system. Agendas are available in advance by contacting Project Director Sally Harold at The Nature Conservancy, (203) 226-4991 x207, sharold@tnc.org.

The Saugatuck River Watershed Conservation Compact

We, the undersigned chief elected officials, on behalf of our municipalities, recognize that:

1. The Saugatuck River and its tributaries, including the Aspetuck and the West Branch, are respected and valued by the people who live around them. Federal, state, local and private agencies and citizens share a common interest in working to preserve the quality of the streams, their surrounding habitats, and the watershed basins that encompass them.

2. The watershed contains a rich diversity of aquatic and terrestrial habitats that support a wide array of plant and animal species, including some which are regionally rare. The area incorporates a 15,000-acre block of protected forest land surrounding the Saugatuck and Aspetuck Reservoirs, the largest such forest in southwestern Connecticut.

3. Land and water management practices throughout the eleven watershed communities affect the health of the entire watershed system. Therefore, uniform watershed management policies are necessary and mutually beneficial.

4. The ecological health of the watershed is vital to the economic livelihood and social well-being of those who live and work in our communities; it enhances property values, recreation and educational opportunities, and is integral to sustaining quality of life.

Furthermore, we understand that:

1. Land and water management are the key determinants of the watershed's health.

2. A healthy watershed ecosystem is consistent with each municipality's goals of promoting a healthy community, preserving town character, fostering ecological integrity, and nurturing sustainable economic growth.

Therefore, the towns of Bethel, Danbury, Easton, Fairfield, Newtown, Norwalk, Redding, Ridgefield, Weston, Westport, and Wilton enter into this voluntary compact that acknowledges their commitment to work cooperatively to balance conservation and growth by:

1. Protecting and enhancing the water resources of the watershed, including the quality of the water, the integrity of normal stream and groundwater flows, and the flora and fauna of these aquatic ecosystems.

2. Supporting efforts to link and maintain habitats and rural landscapes throughout the watershed.

3. Working to ensure the long-term environmental health and vitality of the watershed and thereby enhancing the social and economic vitality of the watershed communities.

Signed by the Chief Elected Officials of the Saugatuck River Watershed's towns; Signed on the 6th of April, 2006.

Brief Historical Background

Saugatuck literally means, "river flowing out." Long before the "European invasion", American Indians lived along the river's banks and fished its waters. There were smelt, sea lamprey, Alewife, Blueback herring and American shad. In an 1828 edition of The Saugatuck Journal it was described as "the river of little fishes" because of the many smelt.

Colonists eager to take advantage of the country's growing economy harnessed the river's power to fuel mills, forges and other industry along its banks. Later, larger industries were established, particularly in the lower watershed. Ultimately this polluted the waters and the variety of and abundance of species declined.

With the advent of the Clean Water Act in 1972 and increasing environmental awareness, industries cleaned up their operations and since then, in this watershed, most have moved away from the river. Point source pollution has been significantly reduced, and efforts to improve habitats, water quality and species diversity are increasing.

Today, the Saugatuck River Watershed is one of the healthiest watersheds in the area. Its water quality and macroinvertebrate populations are used as benchmarks against which the health of other streams is measured. The CT DEP has targeted the watershed for restoration of anadromous fish passage (fish species moving from saltwater to freshwater to spawn). Working with local partners including the CT DEP, Aquarion Water Company and private land owners, we have secured fish passage over more dams than on any other river in the state.

Influences on the Health of theWatershed

Development

Development can cause fragmentation of habitats and the loss of natural vegetation and forested areas. Development increases the amount of impervious surface which in turn can increase the speed and volume of storm water runoff, decreasing the amount of water recharging ground water supplies and increasing flows in streams. These storm pulses can cause alteration to the natural sediment, chemical and temperature regimes in rivers and streams.

Excessive runoff can erode stream banks, causing damaging scour and sedimentation to the stream bottom. Excessive sediment loads can smother fish eggs, damage fish gills and decrease light penetration through the water column.

Dams

Even the smallest dams affect stream flow and the movement of aquatic species. Resident and migrating species may be unable to move freely up and downstream, limiting their access to spawning grounds, prey and healthy habitats. As migratory fish enter the Saugatuck in the heavily developed lower watershed they are often unable to pass through to the more natural, less polluted upper watershed for spawning. Dams can also trap sediment and change water temperature which may create intolerable conditions for some species dependent on cooler water or riffles rather than ponded habitats. The Saugatuck River Watershed contains over 110 dams.

Healthy fish populations depend on having access to habitats necessary for all stages of their life. Diadromous fish depend on both fresh and saltwater habitats, but all fish need a variety of habitats for spawning and feeding. Some depend on swift moving cold water, while others need warmer, calm waters.

The abundance of many fish species has declined quite rapidly and these declines have affected the health of other species that prey on fish. Scientists often are unable to pinpoint the exact cause of these species' declines. It may be the cumulative affect of multiple environmental changes such as change in water temperature, loss of access to spawning habitat, or change in existing habitat, overfishing, pollution and increased predation by another species. Scientists have found that restoration of habitat and restoration of access to historical habitats can help improve the viability of certain fish species. Once stocks start to increase, birds dependent on fish reappear along our rivers and the system starts to become whole again.

Stream Crossings

Stream crossings can also disrupt a river's natural flow, exacerbate flooding and restrict aquatic and terrestrial species' movement up and downstream.

Stream crossing guidance documents have been developed and are used in some states to ensure that culverts and crossings are sized so as not to disrupt travel corridors of species in the area and /or to cause flooding problems during storm events. A sample of a stream crossing guidance document is available at: http://www.nae.usace.army.mil/reg/Riverways%20Program%20Stream%20Crossings%20Handbook.pdf or search "stream crossing guidance Mass Riverways" on the internet.

Providing Opportunities for Fish and Eel to Move UpStream

The CT DEP has on file a list of over 100 dams located within the Saugatuck River watershed - approximately one dam every 2.5 miles. In addition, there are dozens of small 'rockpile' dams scattered throughout the streams for which the DEP has no record. Add to that number the more than 500 stream crossings in the watershed and you can see that our rivers are no longer able to flow naturally. Dams can interrupt the natural cycle of plants and animals in the river by reducing the frequency of flooding events. Dams can interrupt the transport of sediment through the river system. Natural distribution of substrate is important for the organisms that live in the streams. Dams can also change the temperature of streams and they may affect water quality downstream. Finally, dams impede the movement of resident and migratory fish species and other aquatic organisms. Each driveway, road, and path that crosses a stream should be designed so as not to restrict in-stream movement of aquatic species, choke flood waters or cause unnaturally deep or shallow depths.

During the past three years, The Nature Conservancy's Saugatuck River Watershed Partnership has worked with local partners, including the CT DEP, Aquarion Water Company, Trout Unlimited, MBI, Bridgewater Corporation and private land owners, to secure fish passage over and around dams. Our first project was a fish bypass that runs through a corporate propety and allows fish the opportunity to bypass the Dorr's Mill/Oliver Pond dam to reach the Aspetuck River and farther upstream in the Saugatuck River. We also enhanced the operation of a fishway at the head of tide in the Saugatuck where the river is quite wide and the fishway ceased to be effective during the high tide. Here, the Partnership used "fish booms" (*see photo above)* to direct fish to the fishway and installed sidewalls on the fishladder to maintain the concentrated flow necessary for fish to detect and ascend the fishway. These seasonally installed "fish diversion booms" are modified oil retention booms and it's the first application for this type of use in Connecticut.

In the spring of 2007 our first electronic fish counter (donated by Aquarion Water Company) was installed at the dam at the head of tide and allowed us the opportunity to count the number of river herring using the fish ladder. We documented 960 fish using the fishladder and during a nighttime snorkeling survey, a school of alewife was observed moving upstream. In the 2008 spawning season we documented over 3,000 fish going through this counter.

This year there are three more fish passage projects planned in the watershed. We have received permission from two dam owners, one in Weston on the Saugatuck and one in Westport on the Aspetuck, to modify their dams with fishways. Funding for design and construction of these fishways has been secured by a grant from the Long Island Sound Futures Fund. This will be the fifth dam on the Saugatuck to have fish passage, while the dam on the Aspetuck will be the first for that river. When these two fishway projects are completed, we will have opened up another mile of river on the Saugatuck and a half mile on the Aspetuck. The third fishway is being planned for Hawley's Brook in Trout Brook Valley and is a project of the Aspetuck Land Trust.

With over 100 documented dams in the rivers of the watershed, we have a long way to go before we can reestablish access to the complete historic spawning ranges for Alewife and Blueback, but the Partnership's energy and enthusiasm are infectious and the support from dam owners and volunteers has been tremendous. (It is likely that we will not be able to reestablish access to the complete historic range, but will work to provide access to as much suitable habitat as possible.)

Land Management and River Health

Historically, pollution concerns focused on industry and direct discharges to streams and other water bodies. Since the Clean Water Act was passed in 1972 most of these point sources have been eliminated. In the Saugatuck Watershed there is no one specific source of pollution, rather it is the cumulative affect of myriad sources which, when combined, alter the way the stream system functions.

Non-point source pollution, the major threat to the Saugatuck's health, stems from a multitude of surface pollutants that are carried to the watershed in stormwater runoff. Bacteria and excessive nutrients from pet waste, farm animals and wild animals (often geese flocks), fertilizers, herbicides and pesticides from land management practices, toxins, oils, salt and other pollutants from roadways can impair water quality and stress aquatic organisms. Leaking septic systems and overflows from sewage treatment plants can also compromise the health of our rivers and streams. Non-point source pollution is difficult to address because it requires a collective effort from all members of the watershed community.

During the winter of 2007, volunteers from the Partnership researched and wrote a White Paper on Alternative Septic Treatment Systems (ATS) outlining concerns about current permitting, siting, operation and maintenance of these small "package" systems in CT. The manufacturers tout advanced treatment of effluent in a more compact, and more technically advanced septic system requiring less land for effective treatment to meet state drinking water standards. Current systems installed and operating in CT however are not performing consistently and there is some confusion over where responsibilities lie should the system fail. The paper can be found on The Nature Conservancy's website or search for "nature.org white paper" on the internet. www.nature.org/wherewework/northamerica/states/connecticut/files/ats_white_paper.pdf

Public Outreach to Educate about Watershed Concerns

The Saugatuck River Watershed has sponsored two free all-day workshops on watershed health to educate the public on many of these issues. Each workshop was attended by eighty participants, the rooms were filled to capacity and we had a wait list. The first workshop in March 2007 was on sediment and erosion control and stormwater management. The eighty attending represented 19 Connecticut towns.

Our second workshop, held in November 2007, covered everything from an introduction to a watershed, to public drinking water supply protection, watershed hydrologic modeling and fish passage science.

These workshops have been very successful for the partnership. Not only does the public learn about the issues we are concerned about, but we learn from the public what they are concerned about. Our workshops were made possible by the grants and private support we received for our activities.

Stream Flow and Water Use

The Saugatuck River Watershed is a drinking water supply watershed. Water is impounded and diverted from the Saugatuck River to the Aspetuck Reservoir and then diverted further to the Hemlocks Reservoir and the water treatment plant. Water from this watershed is part of a much larger drinking water supply system operated by Aquarion Water Company of CT. Most residents of the watershed depend on private wells for their drinking water and many use additional wells for irrigation. Water is also withdrawn from large wells for golf courses within the watershed and for two public and one municipal drinking water supply wellfields.

Excessive diversion from or withdrawal of water from our rivers, streams and aquifers can alter the timing and magnitude of streams flows. An unmanaged river will naturally experience periods of high and low flows, but in a managed river system demand for water may cause unnaturally low stream flow and may prevent high flows such as would occur at spring melt.

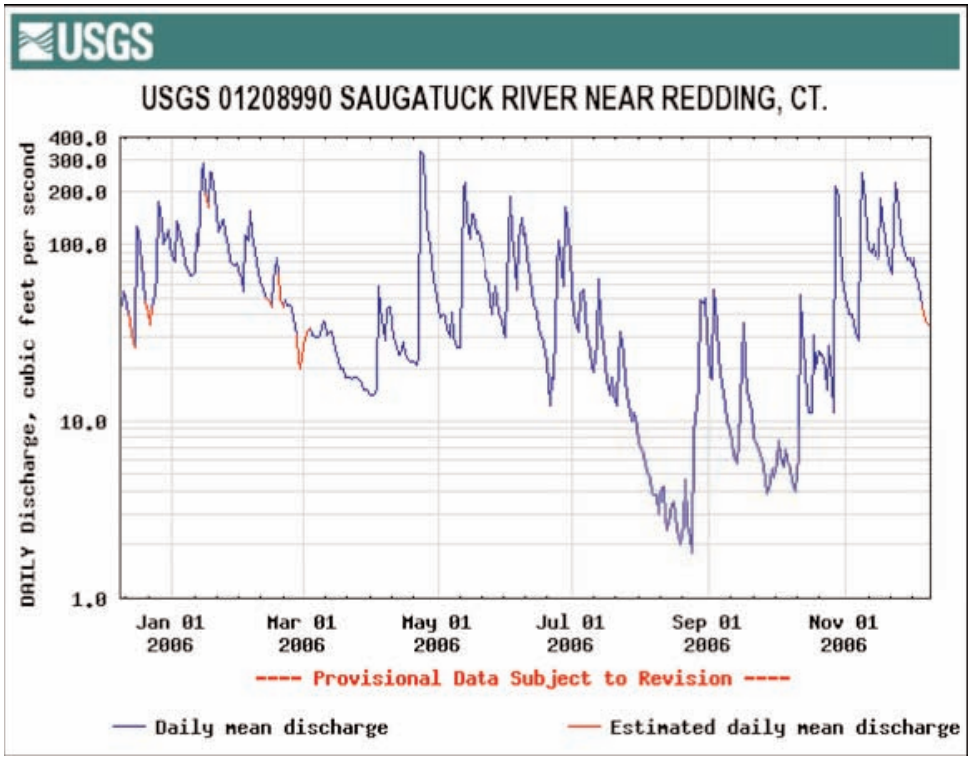
A managed system may be more predictable and water supply may be more reliable from public sources rather than a private well, but fluctuations in flow provide important cues to organisms such as the initiating spawning runs upstream, they transport seeds onto floodplains and help to move sediment on the stream bottom.

Water is a valuable resource that should be appreciated by all. Groundwater and surface water quality are important for environmental health, but also public health. The watershed partnership has been working on a second white paper on protecting source water quality.

The Conservation Action Plan seeks to maintain high water quality in both the upper and lower watershed. Success depends on people adopting a stewardship ethic for the watershed, smart land management practices, smart growth and control of stormwater and polluted runoff.

The gauge readings below reflect the near natural stream flow in the Saugatuck River. This gauge is in the upper watershed upstream of the Saugatuck Reservoir. Note the change in flow during the year.

Managing water use in our watershed so that stream flows attempt to mimic these natural patterns will help to ensure the continued health of the system.



In November of 2007 The Nature Conservancy and the Aquarion Water Company signed a project agreement for a multi-year study of the lower Saugatuck and Aspetuck Rivers and the development of a management model for the reservoir system. Using this model, research and good science, we will work together to identify opportunities to modify reservoir operations to enhance stream health while continuing to provide adequate and reliable water supply to Aquarion's customers.

Assessing Water Quality How Healthy is the River System?

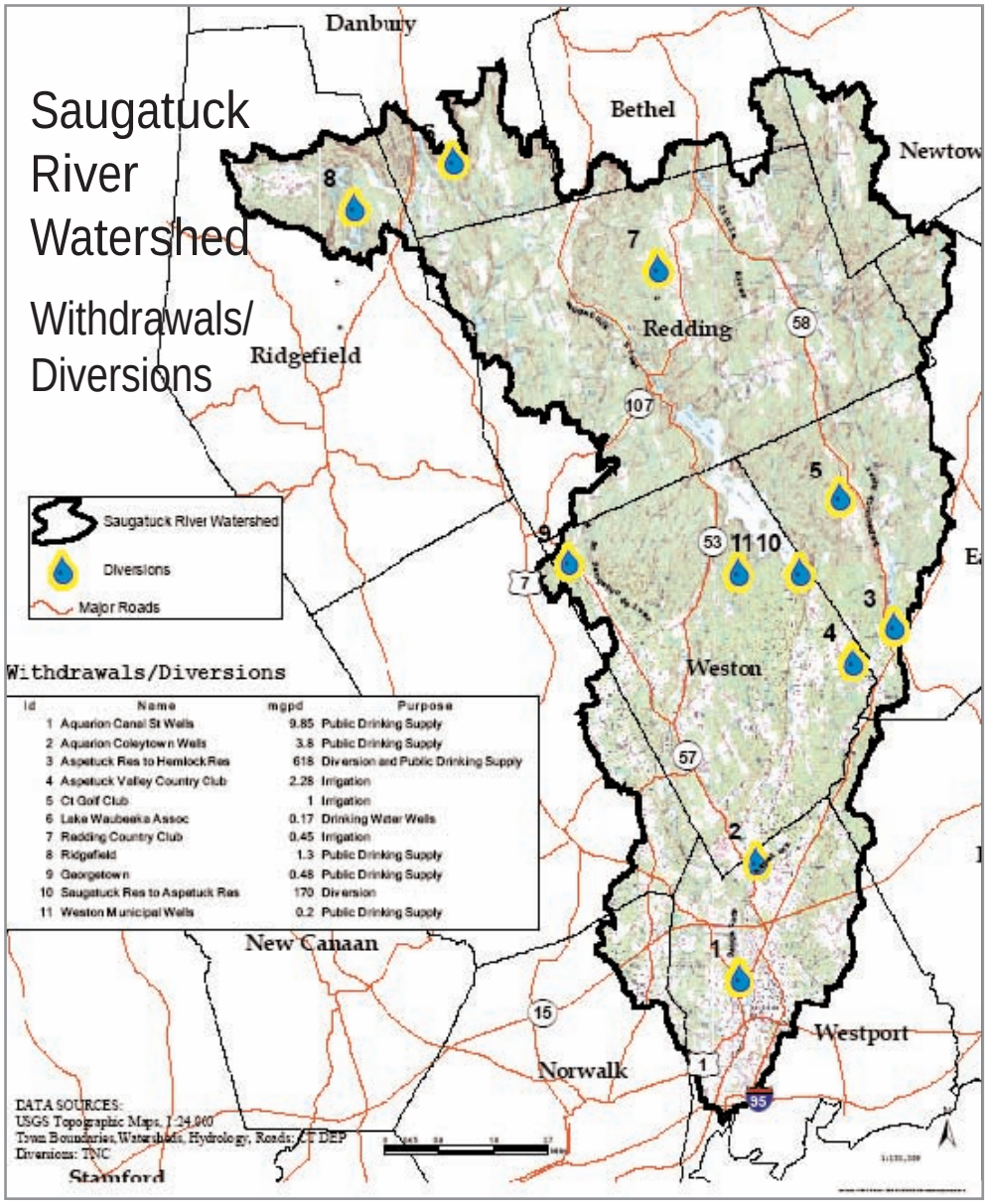
Riffle-Dwelling Benthic Macroinvertebrates

Under state and federal regulations Connecticut is required to monitor water quality in its 5,800 miles of rivers and streams. (5,800 miles is roughly the length of our borders with Mexico and Canada combined!)

A major component of any water quality assessment is the determination of how well that waterbody supports a wide range of native organisms that are sensitive to environmental disturbance. Invertebrate community structure is used as the primary indicator of water quality impairment where the level of impairment is based on the degree of deviation from an ideal reference community. A reference community is the group of organisms that one would expect to find under ideal environmental conditions. The primary tool for this type of assessment is the riffle-dwelling benthic macroinvertebrate community.

Riffle-dwelling macroinvertebrates are organisms without backbones. They are visible to the naked eye and live part of their life in fast-moving sections of the stream bottom (substrate). They include many insects in their juvenile stage (dragonflies, stoneflies, caddisflies, etc.), crayfish, worms and freshwater mussels. These organisms, like those shown on page 7, are very sensitive to stress and therefore very useful for detecting environmental disturbance resulting from introduced sources of point and non-point source pollution.

The Saugatuck River Watershed Partnership has hosted an annual training and sampling day for the past four years. Michael Beauchene, Volunteer Monitoring Coordinator for the CT DEP Bureau of Water Protection and Land Reuse has developed a sampling protocol that can be followed by volunteers of all ages. These organisms have several advantages for use including: ease of capture, they inhabit a wide range of water quality



conditions, and the assessment methodology has been well established. The sampling is fun and it takes only a few hours to complete a site survey. In the past four years, 92 volunteers have helped to sample eleven sites in the Saugatuck River Watershed.

Volunteer samples and data sheets are sent to DEP where they are included as part of the CT DEP's bi-annual water quality report to Congress. A copy of the complete report of the DEP's annual statewide sampling efforts, which depends on volunteers such as ours as well as DEP staff, can be found at: http://www.ct.gov/dep/lib/dep/water/volunteer_monitoring/2007_rbv_report.pdf

We have noticed that samples collected at sites farther upstream tend to have a greater diversity and contain more pollution-intolerant species indicating a healthier environment, while samples collected lower in the watershed contain fewer of the more sensitive species, less diversity and a greater number of pollution-tolerant species.

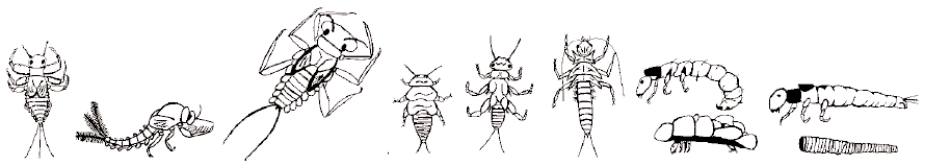
Water Quality Monitoring

Volunteers are always needed to assist with Westport's Harbor Watch/River Watch (HWRW) program. Volunteers are trained to collect water samples, and measure conductivity and stream temperature. For those interested, you can even learn to process the water samples in their lab. For the past three years, water samples have been collected at 25 sites within the Saugatuck Watershed bi-weekly from May through September. This data is sent to the CT DEP and shared with interested municipalities and others.

Water quality measurements continued along the length of the Saugatuck River and at the mouths of all major tributaries for the period of May 1st through September 30th, 2007. Key items of interest and analysis were dissolved oxygen content, conductivity (measurement of ions in water) and the presence of E. coli bacteria in the waterway. The study was funded by the DEP with Harbor Watch/River Watch as the contract agent. The Nature Conservancy's Saugatuck River Watershed Partnership provided HWRW $5,000 through their Long Island Sound Futures Fund grant to carry out the same testing regime on the Aspetuck River. Additionally, grant funding from the Meserve Fund supported water quality testing at four new sites in the upper watershed four times during the fall to assess water quality in small headwater streams in less populated areas.

The summer of 2007 was characterized by hot weather and little rainfall from May through September. This reduced flow in the rivers and a few of the smaller tributaries dried up (Kettle Creek and Beaver Brook). In general, water conditions on the main stem of the river were good from the Saugatuck Reservoir down to Keene Park in Weston. Water quality in the lower Saugatuck from Keene Park to the Lee's Pond Dam was only fair as bacteria counts increased. The pond shows an extensive overgrowth of aquatic plants and appears to be approaching a eutrophic state. Recent nutrient tests done by Richard Harris (Director of Harbor Watch) confirm low DO levels in the pond's deep water.

The condition of the major tributaries in the watershed varies according to population density with rising bacteria counts and lower DO values based on the amount of impervious surfaces, the proximity of septic fields to the water and the lack of riparian buffer. The only tributary that meets the CT DEP criteria for E.coli bacteria is Jennings Brook near the reservoir. The others i.e., Beaver Brook, Kettle



Creek, West Branch and the Aspetuck are moderately impaired while Poplar Plains Brook and Indian River are in very poor condition. (pers. comment Dick Harris)

Species diversity and health depends on the availability and quality of habitats and water within the watershed. The Saugatuck River Watershed has healthy headwater streams and wetlands, cold water tributaries, large forests (including the largest continuous forest block in southwestern Connecticut), ponds, cascades, slow river runs and a large, well-protected (though heavily developed) estuary. Our ability to continue to enjoy fishing, wading and swimming in this watershed depends on our stewardship. With careful planning and management of resources we can protect water quality and keep these habitats healthy and the connections between them intact.

Impervious Surface

Impervious surfaces, including parking lots, roadways, building roofs, tennis courts, pools, and driveways prevent water from infiltrating the ground. When a storm hits, rainwater runs more quickly across hardened surfaces and carries with it whatever is on those surfaces. This may include pet waste, litter, oil and grease dripped from cars and any number of other things we'd rather keep out of our streams. If the weather is warm these surfaces will be warmer than the surrounding natural vegetation so the stormwater runoff temperatures will be higher and the temperature of our rivers can rise. This increase in temperature can stress to the organisms living in those waters.

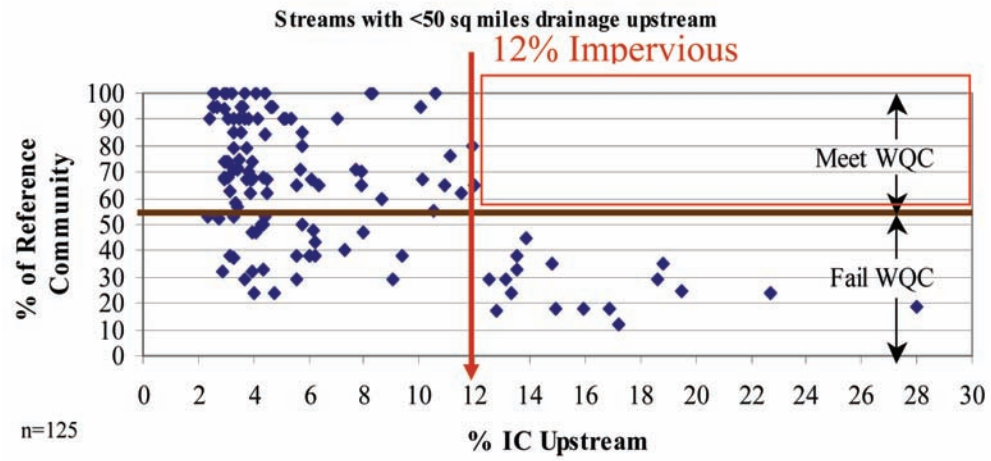
Protecting our rivers requires careful planning to prevent excessive impervious surface, especially in areas critical to groundwater recharge. We know what happens when a wetland is filled, but good sandy soils can also help to absorb stormwater runoff. The Watershed Partnership is working to develop a model demonstrating the relationship between surface and groundwater in the watershed.

The graph below shows that in watersheds with very little impervious cover a greater percentage of the reference community will be found. As Impervious cover increases water quality decrease and fewer members of the reference community are found. A reference community is the diverse assemblage of species expected to be in the system if conditions are good.

Vegetation helps to absorb stormwater, nutrients and pollution. Vegetation provides habitat and travel corridors for animals and shade for the river.

Riparian Buffers

Riparian buffers are areas of natural vegetation found along the edges of streams and ponds. Buffers help to link the river system to the upland area. Streamside vegetation provides shade which helps to keep stream temperatures cool, provides important habitat for insects

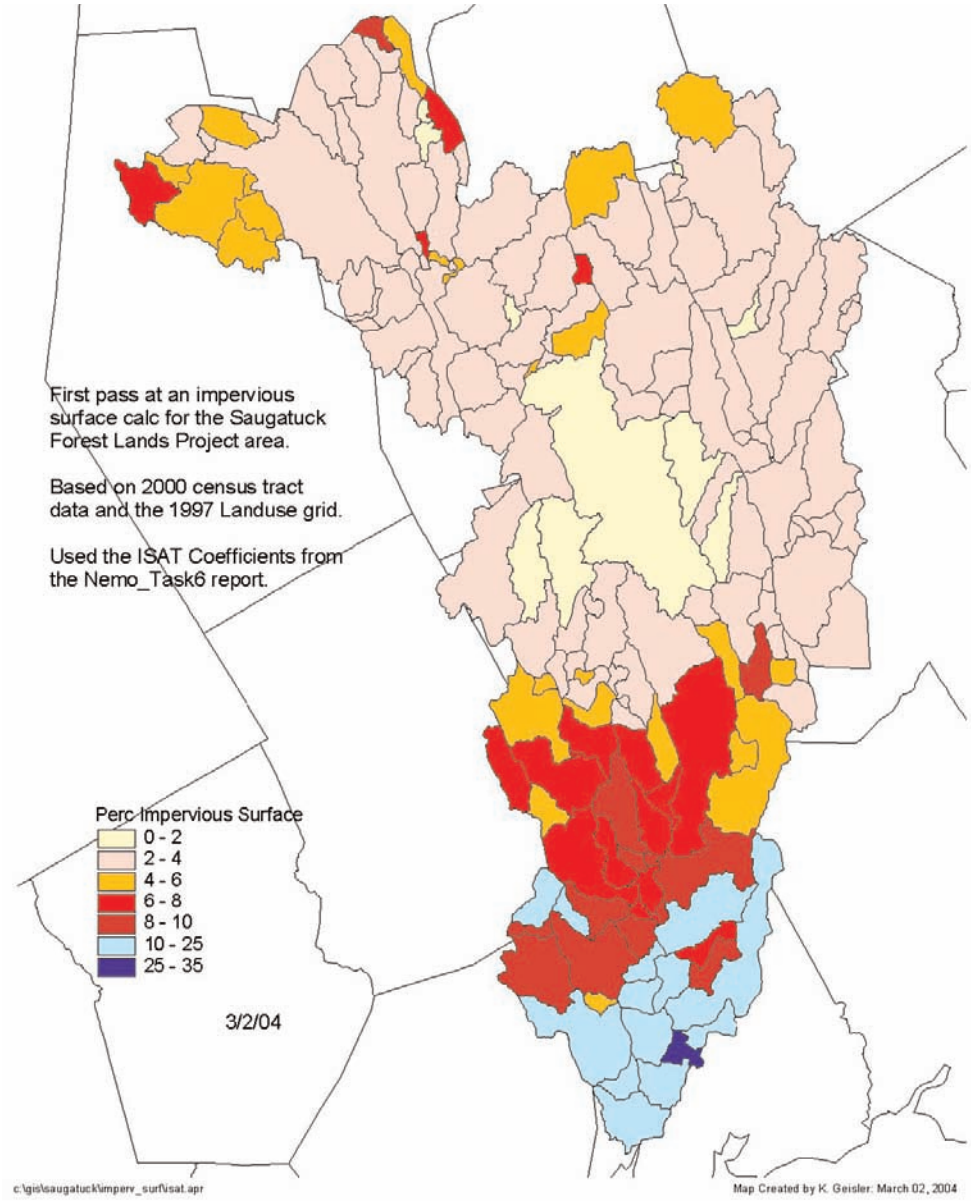


and animals along the stream bank and helps to slow and filter stormwater runoff. Vegetation along a stream bank takes up nutrients and pollution and helps to stabilize the soil, reducing the erosive effect of stormwater runoff and floodwaters. Although removing vegetation along one's own property line might seem insignificant, an accumulation of similar actions up and down our streams would have a very significant effect on stream health.

When stream temperature fluctuates too much, more sensitive species like some of the macroinvertebrates and certain fish species (like brook trout) will suffer. Likewise, if excessive pollutants such as excess nitrogen, phosphorous, lawn chemicals, oils, or sediment enter a stream, habitat and species health will be diminished. The eastern brook trout has become the poster child for the national conservation group Trout Unlimited. This native trout is dependent on clean, cold water streams. The Saugatuck River Watershed contains one of Connecticut's ten "Class One Trout Management Areas", an area where native populations of breeding brook trout are still found.

Stream Walk Surveys

The Nature Conservancy conducts annual volunteer streamwalk assessments in the Saugatuck River Watershed using the CT USDA's Natural Resources Conservation Service guidelines. Each spring, members of the NRCS staff conduct training for volunteers. Once trained, volunteers, working in teams, survey a 2-3 mile section of stream and report back to us on what they observed. These stream surveys describe the physical conditions of the in-stream and stream-side characteristics of perennial (flowing year round) streams in the watershed. The information collected is used to identify such things as areas that are degrading due to erosion and sedimentation, lack of adequate riparian (streamside) vegetation, and sources of direct discharge into the stream. These areas of concern can then be incorporated into our Geographic Information



System (GIS) for mapping. By overlapping various data layers on our GIS system such as these areas of concern, water quality testing data, macroinvertebrate sampling data and impervious cover for example, we can begin to make observations about land and water management practices and stream health.

In the past four years, 74 volunteers have been trained by NRCS staff during our annual workshops and these volunteers have helped to survey over 60 miles of stream in the watershed. During 2007 we had 12 volunteers who surveyed just over 30 miles of headwater streams.

Other Efforts

Protecting Eel

Funding in 2007 from the Long Island Sound Futures Fund allowed us to hire a part-time, short-term project coordinator, Dave Dembosky. Dave's graduate thesis at the University of New Haven focused on eel migration within the watershed and the problems eels have with water supply infrastructure. His thesis project and his interest in protecting eel led to a meeting with the CT DEP, Aquarion Water Company and TNC to discuss ways to protect migrating eels from the water supply pumps. We hope to collaborate in the future to implement some of the ideas generated from this meeting.

Eel are a catadromous species meaning they spend their juvenile phase in saltwater and their adult life in freshwater. These fish have one spawning ground in the mid-Atlantic Sargasso Sea. Eel populations across the entire Atlantic seaboard are in decline. The Atlantic States Marine Fisheries Council has adopted a fisheries management plan to help restore the species.

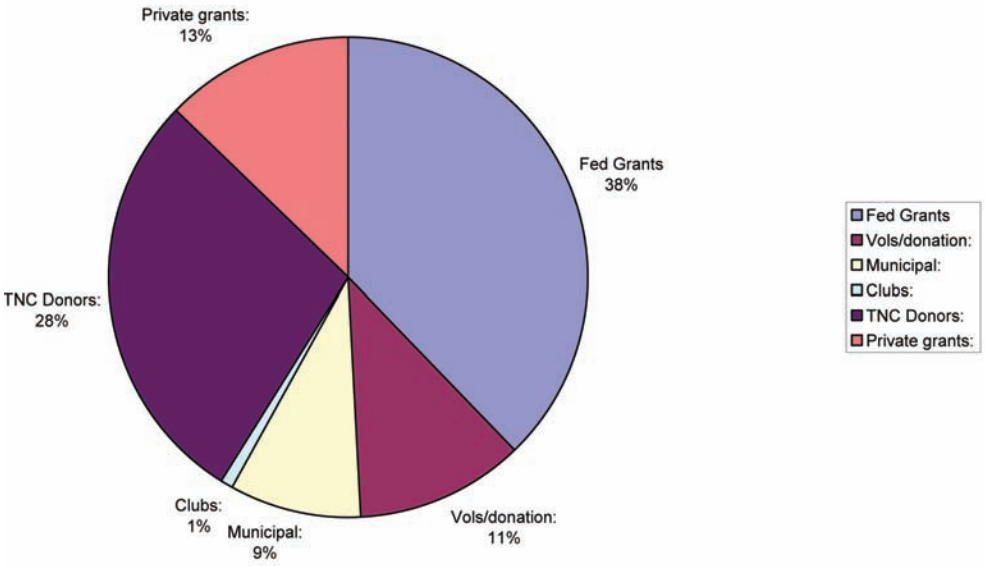
Land Protection and Land Development

Land conservation efforts in the watershed help to protect natural ecosystem function, water quality, sensitive habitats and drinking water quality. Over 17,000 acres of watershed land are currently under conservation ownership, and The Nature Conservancy continues efforts to protect additional open space. CT DEP has supported these efforts state-wide with open space grants. Recently The Nature Conservancy and the Town of Redding were able to purchase 40 acres west of the Saugatuck Reservoir with assistance from a CT DEP Open Space award.

Development proposals with housing densities exceeding the State Plan of Conservation and Development's recommendation of one unit per two acre lot within a drinking water supply watershed (draining to a drinking water supply reservoir) are a concern as are developments which propose the use of alternative septic treatment systems (ATS). The cumulative impact of increased impervious surface within the watershed threatens the health of our rivers and the quality of our drinking water. The advanced technology of an ATS system promises effective treatment of effluent, but CT DEP records show these systems do not consistently meet permit requirements for remediation of nitrogen and phosphorous to drinking water quality standards. CT prohibits the use of ATS within a public drinking water supply reservoir watershed (Public Act 01-129), and we believe that we should not reply on these systems for wastewater treatment until the technology is proven to consistently perform to meet standards protective of our environment.

The green and blue landscape of the Saugatuck, just an hour from New York City, is attractive not only to those of us who live here, but to many wishing to move here. Development pressure is constant and smart growth is critical. The Nature Conservancy has supported legislation to maintain recommended housing densities of one unit per two acres in drinking water supply watersheds and twice supported a proposal for a moratorium on permitting ATS systems for two years or until better regulations regarding

Saugatuck Watershed Partnership Support



siting, approvals, operation and maintenance of these systems have been developed. ATS systems may be a wave of the future and they may be able to help us protect water quality, but the technology should first be proven in a testing facility under similar conditions to those at the location for which it is being proposed and the successful remediation of effluent should be consistent and certain.

Appeal for Support

The Saugatuck River Watershed Partnership seeks support for projects planned within the watershed from a wide variety of sources. We are engaged in projects with partners across the watershed in an effort to implement a conservation action plan developed in 2005 with the assistance of over 80 workshop participants representing federal, state, and local agencies, stakeholder groups and interested citizens. These projects, when implemented will help to ensure the quality of habitats and water throughout the watershed. They will provide opportunities to engage land owners and volunteers and will raise awareness of the value of a healthy environment and instill in those who work, live and play here a sense of stewardship for the Saugatuck River Watershed.

Our annual monitoring projects provide volunteers with an opportunity to get their feet wet and enjoy the natural beauty of the watershed. The Partnership also provides support to the River Watch/Harbor Watch Program at Earth Place in Westport which conducts water quality monitoring throughout the watershed. In the past, we have shared volunteers who take water samples and process them in Earth Place's lab. In 2007, we provided grant funds to continue a monitoring program on the Aspetuck River.

During early 2008, the Saugatuck River Watershed Partnership teamed up with the Land Use Leadership Alliance (LULA) program developed by the Pace University Land Use and Law Center to bring a series of four, all-day workshops to decision makers throughout the eleven towns in the watershed. The four-week workshop series was provided at no cost to a group of 40 hand-picked individuals including representatives of town boards, commissions, elected officials and others who are committed to their towns. The interest in the program was overwhelming and we had a fully subscribed program. These participants will become better informed about rights and responsibilities of land use decision makers, learn how to empower their municipalities to make wise land use decisions, develop strategies, ordinances, and long-range plans which will protect the resources available now. The LULA workshop series costs $40,000 and much of that cost was provided through grants LULA organizers received. The Saugatuck River Watershed Partnership provided $5,000 to LULA to bring the workshop series to the watershed.

We are interested in continuing to bring speaker programs to the public and look for opportunities to speak to local groups. Making good decisions about how we manage resources in the future is critical to the continuing good health of the Saugatuck River system. Understanding the impact of current management of resources is also vital.

Financial Support

Since our start-up workshops in 2005, The Nature Conservancy has received over $430,000 in support of the Saugatuck River Watershed Partnership. Contributions have been received from federal grants, private foundations, local civic groups, watershed municipalities and from Nature Conservancy donors. Most federal grants require a match from the grantee often at a 1:1 ratio. Funders depend on recipients being able to leverage their grant funds with private financial contributions and volunteer time. Our success in meeting our match requirements demonstrates to funding agencies that others have confidence in our work. Since 2005, we have received five federally-funded grants totaling $164,000. The value of volunteer hours and two fish counters donated to the partnership totaled nearly $50,000 and helped us to meet our required match of $113,452. Additional funds raised have enabled us to initiate projects such as the newly announced Flows Management Project with Aquarion Water Company, a freshwater mussel survey, water quality sampling in the upper watershed and to develop outreach materials. New projects will require additional funding and match monies. Our work has just begun in the Saugatuck River Watershed. We invite your support!

We appreciate the support of the Meserve Memorial Fund, the Anne S. Richardson Fund, Westport Kiwanis, Patagonia of Westport and the Nutmeg Chapter of Trout Unlimited this year. Also, we thank the towns of Easton, Fairfield, Redding, Weston, Westport and Wilton and, of course, our generous private donors for their financial contributions to our efforts. Please consider contributing to our efforts.

Grant Funded Projects

NOAA/American Rivers –

$25,000 (Required match $13,500)- Poliak Pond Alternatives Analysis for the Redding Land Trust to determine the impact of a small dam on the health of the Umpawaug Pond Brook a tributary to the Saugatuck and an assessment of alternatives to be considered to improve ecological conditions at the site.

NOAA/RAE (Restore America's Estuaries) - $28,000

(Required match $21,600)- Funding from this grant allowed us to install an "eelevator" (trap) at the Diamond Hill Dam (Redding) to learn about the number of eels reaching the foot of the dam. We were also able to fabricate and install sidewalls for the Wood Dam Fishway (Saugatuck's first dam, above King's Highway North, Westport) so that migrating fish would have more success finding this route to upstream habitat. In addition to the sidewalls, diversion booms were installed during the migration season to

direct fish to the fishladder. An additional boom was installed farther upstream to divert fish from one side of a mid-channel island with a dam to the other free-flowing channel on the eastern side of the island.

LIS Futures Fund 2005 – $25,000 (Required match $13,000)- to conduct a series of planning workshops to develop a partnership of interested stakeholders and the municipalities and a conservation action plan outlining our objectives and strategies to be implemented to help enhance and protect the health of the Saugatuck River Watershed.

LIS Futures Fund 2006- $46,000 (Required match $43,000)- This grant supported outreach efforts including costs associated with water quality testing, macroinvertebrate sampling and our annual stream walk program. This funding also allowed us to hire a part-time short-term conservation manager who assisted with project development and implementation, outreach efforts and design and production of a printed brochure and webpage content.

LIS Futures Fund 2007 – $40,000 (Required match $25,000)- Grant funds are being used for the design and construction of two fishways in the watershed.

Sustainable Flows Project – On November 8, 2007, the Aquarion Water Company and The Nature Conservancy signed a project agreement to launch an innovative partnership aimed at meeting human needs for water while protecting key ecological processes well into the future. Together, Aquarion, TNC and a team of freshwater experts will develop a sustainable water management plan that protects the Saugatuck River's rich diversity of plants and animals while ensuring clean drinking water, recreation and other essential community services throughout the river's watershed.

Our Past Efforts

In March of 2006, the Saugatuck River Watershed Partnership printed and distributed a report discussing the Saugatuck River Watershed and the Partnership. Since then, we have engaged in a number of projects to help preserve and restore the health of the Saugatuck River Watershed. These projects include outreach efforts such as public talks, walks and school visits. We have also secured grants and private financial support to enhance fish passage, test water quality and provide two public workshops on watershed health.

We have engaged volunteers in monitoring projects, river clean-ups, and work days. We have applied for and received funding for our work and continue to reach out to new stakeholders, partners, volunteers and supporters. Our success in protecting the health of this watershed depends on successful collaboration with everyone who lives, works and plays in the watershed. Join Us!!!

Outreach Efforts

Presentations and various public outreach efforts, 2007:

DPH source water protection meetings
Easton Lion's Club
Fairfield Earth Day
Fairfield Garden Club
New Canaan Men's Club
Redding Earth Day with hike
Weston Conservation Commission
Weston Library
Weston Board of Selectmen – town meeting Weston Kiwanis
Westport Earth Place Green Fair
Westport Kiwanis
Westport Library
Westport Rotary
Westport Sunrise Rotary
New Canaan, Waveny Park
"Environmentality" Show – Speaker and exhibitor
UCONN Natural Resources Conference Speaker
Wilton, Ct. Friend's School
Blue Waters Symposium Panelist – Fairfield Garden Club
Sediment and Erosion Control Workshop - March
Watershed Health Workshop - November

Development of Partnership Brochure and webpage content:
http://www.nature.org/wherewework/northamerica/states/connecticut/preserves/art22151.html

Stream Clean up at four watershed sites
Stream Walk Training (4th annual)
Macroinvertebrate Sampling identification workshop (4th annual) eleven sites
Fall River herring popping survey
Kayak tour of the Saugatuck with the Appalachian Mountain Club
Norwalk River Watershed Association – Saugatuck River Watershed Partnership hike

Special thanks to all of you who have helped the Partnership this past year. Thank you for your participation at our monthly public meetings. Thank you for inviting us to share with you our goals. Thank you for your financial support and for getting your feet wet working in the river with us! To members of local stakeholder groups, donors, funders, volunteers, citizens, and my colleagues at The Nature Conservancy thank you for your input, ideas, critiques, time, enthusiasm and encouragement. I look forward to new collaborations and the continued efforts of so many people from so many different organizations to meet our goals.

Sally Harold
Project Director

Saugatuck River Watershed Partnership Meeting Attendees 2006-2007

*Fred Anderson Conservation Planner Weston
*Alexis Cherichetti Sr. Environmental Officer Norwalk
*Alicia Mozian Conservation Director Westport
*Patricia Sesto Director Environmental Affairs Wilton
*Tom Steinke Conservation Director Fairfield
*Scott Sharlow Newtown GIS specialist, Ridgefield resident Ridgefield First Selectman Rudy Marconi Ridgefield First Selectman Woody Bliss Weston
Gavin Anderson Resident Westport
Janet Beasley Resident Westport
Misty Beyer Fairfield Garden Club Fairfield
Dave Bjerklie USGS E. Hartford
Bill Blaufuss Trout Unlimited, Nutmeg Chapter Westport
John Bonsignore Resident Redding
Renee Bowie Resident Redding
Kieran Broatch CFE New Haven
Nancy Cardozo Resident Westport
Len DeJong Manager Watershed and Environmental Management Aquarion
Tom Failla Former Chair, Conservation Commission Weston
Helen Garten Resident Westport
Bob Gerber Resident Westport
Laurie Gianotti DEP
Patrice Gillespie Executive Director, Norwalk River Watershed Association
Dick Harris Earth Place Westport
Mary Hogue Resident Fairfield
Julia Hyman Sound Keeper Norwalk
Lynn Krynicki Environmental Analyst Town of Westport Westport
Bill Labich Highstead Arboretum Redding
Chris Malik Watershed Basin Coordinator CT DEP
Ray Rauth Sound Cyclists Weston
Brian Roach Senior Environmental Analyst Aquarion
Marjorie Shansky Land Use Leaders Alliance (LULA)
Julian Sproule Saugatuck Valley Audubon Wilton
Jean Trapani Appalachian Mountain Club Westport

* Town Representative

Public Workshops 2007

Sediment and Erosion Control and Stormwater Runoff – March 13, 2007

Co-sponsored with the Norwalk River Watershed Initiative

Presenters:
Patricia Sesto, Environmental Planner, Town of Wilton; Why Sediment and Erosion Control is Relevant to you
Marla Butts and Donna Seresin – CT DEP; Just the Facts: Basic S&E Control Practices/ Stormwater Management and Permitting
Terri-Ann Hahn, LADA, P.C. Land Planners; Mud in the Streets: Maintaining Water Quality during Construction
Chris Stone – CT DEP; What's Required - Phase II Stormwater Regulations
John Rozum - UCONN NEMO; Minimizing our Footprint: Low Impact Development
Case Studies: Problems and Solutions
Bruce Morton, Aqua Solutions
Bob Jontos, Land-Tech Consultants, Inc.
Karen Allen – CT DEP

Protecting Watershed Health - November 15, 2007

Presenters:
Chester Arnold, UCONN Center for Land Use Education and Research – Watershed 101
Lee Dunbar, CT DEP CT Stream Flow Regulations
Dave Bjerklie, US Geologicl Survey Watershed Modeling
Jennifer Pagach, CT DPH Source Water Protection
James Houle, UNH Stormwater Treatment Center Goals for Stormwater Control
Michael Beauchene, CT DEP Biological Monitoring: Don't Drink the Water
Seth Lerman, USDA NRCS and Marjorie Shansky, Land Use Attorney, LULA From Planning to Action: Leadership, Natural Resources and Municipal Jurisdiction
Steve Gephard, CT DEP Maintaining Stream Connections

Volunteers

Fish Counter Monitors – April to June 2007 and 2008

Chris Calger, Dave Dembosky and Ron Merly, David Budds, Will Fulton, Aquarion Water Company, Paul Butress, Vickie Butress, Dan Hripak, Colin Kelly

Horseshoe Crab Tagging May – June 2007 and 2008

Horseshoe crab populations have not been studied widely in Long Island Sound, but we recognize that harvesting them in large numbers could cause a serious decline in their numbers. Horseshoe crabs are used for bait and their blood is used in pharmaceutical testing. The Nature Conservancy has organized volunteers during the past three years to assist Penny Howell of the CT DEP with surveys and to tag the animals for Project Limulus, a tagging project developed by Professor Jennifer Mattei of Sacred Heart University.

Horseshoe crabs come onto shore during May and June to lay eggs on our beaches. The male crab holds tight to the female as she makes her way up to the wrack line where she lays her eggs. Crab larvae emerge from their sandy nests around one month later, then spend close to a week swimming until they settle to the bottom and molt. Horseshoe crabs reach sexual maturity between 9 and 12 years of age, and can live fifteen years or more. They are an important link in the food chain; their eggs provide seasonal food to several fin fish species and shorebirds and the crabs are part of the diet of sea turtles. The threatened shorebird, Red Knot (Calidris canutus), that makes a long seasonal migration from the southern tip of South America to Arctic Circle breeding grounds depends on horseshoe crab eggs to replenish their fat supply. Without this resource many of these birds would be unable to make their annual trip.

Horseshoe Crab Tagging Volunteers:

Lib and Amelia Aspinwall Winnie Balboni Banquer Family Barker Family Taylor Boyd Brune Family Renee Bowie Pat Conley Connolly Family Degner Family Janak and Benali Desai Briana Fields Leah Freedman Geoffrey Hadden Rachel Hurst Julia and Don Hyman Sophie and Sydney Kaye Roger and Jared King Mark and Kayla Krasnow Larocca Family Lou Lazar Carol and John Mazza Meredith Miller Michele Moore Gian Andrea Morresi Betty and Paul Nelson O'Hare Family Stuart Petri Jane and James Purcell Alison Rivard Rob Rocke Nancy Sargent Jake Schwartzman Margery Silk Michele Sorenson Jean Trapani Unfried Family Boy Scout Troop 199

Stream Clean-up June 2007 and 2008

Clean-ups were conducted at the Saugatuck Falls and Umpawaug Road/Rte 53 intersection- Redding, Keene Park – Weston, the Trout Management Area at Ford Road, the I-95 Boat Ramp, Saugatuck Rowing Club and Longshore – Westport

Dave Dembosky Pia Tomasello Bill Field Lisa Mezoff Dave Gregory Amanda Mezoff Nina Harold Alison Larocca Sally Harold Sam Glass Diane Saunders Emily Kwong Emily Schaller Annie Harold Jane Trapani Lia Mastropolo Jessica Harriten Liz Macris Lauren O'Neill Alexandra Boucher Ron Merly Katt Riley Casey Peterson Chris Cryder Andy Wier Dave Budds Nick and Joe Burgess

Streamwalk – June 2007

Training conducted by Todd Bobowick and Seth Lerhman - USDA Natural Resource Conservation Service
Joe and Jean Puchalski - Easton Emily Elterich - Fairfield Nina Harold - Fairfield Ann Taylor - Redding Amy Atamian - Ridgefield Ed Kruse - Westbrook Roger King - Weston Dewey Loselle, George Masumian, Ted Freedman - Westport

Macroinvertebrate Sampling - September 29, 2007

Training conducted by Michael Beauchene – CT DEP Water Resources
Assisted by Lourdes Rojas of Yale Peabody Museum Tamar & Ze'Manel Cunha, Jason Garnett, Barb and Chris Kurman, Geoff Martino, Lia Mastropolo, Gian Andrea Morresi , Alex, Brenna & Sian Nimkoff, Yaakov Saturen, Kenny Shepard, Sri &Teri Viswanath, Staples High School, Westport - Mike Aitkenhead and his Environmental Studies class: Erin Ogilvy, Yunke Liv, Jason Cook, Christina Tourdinis, Michelle Esteva, Caitlyn Anderson, Lindsey Walson, Peter Ashman, Tory Waterman, Hillary Travers, Anna Wiggin, Chelsea Hammer, Erika Kretschmann, Rebecca Bib Roger Ludlow High School, Fairfield - Julie Wolfer's Environmental Studies Class: Sarah Beck, Torin Bond, Bryan Prestone, Sam Glass, Jackie Goncalves, Annie Harold, Ashley Cryan, Alison Larocce, Andrew Eilenberg, Duncan Keith, Elise Avallon, Kate Starrett, Joanna Barlow, Meghan Mahder, Allie Lavista, Joanna Piliero, Catie Hines, Carrey Welke, Elise Garab, Sam Minn, Shane Mullen, Nina Filipowich, Ari Sinay.

Extra Project Hands

DEP Diadromous fish program staff, Julia Hyman, Greg Donahue, Chris Calger, Ron Merly, Bruce Ozar, Clay Minor, Andy Wier and Colin Kelly