CAYUGA LAKE WATERSHED
Network News
spring 2005

INSIDE...

Streamside Property Owners – Buffer Your Banks!

By Claire Lobdell, Cayuga County Cooperative Extension

Spring is an especially precarious time of year for our local waterways. As the snow pack melts, the resultant runoff carries with it salt, road debris, pet waste, and exposed sediment, all of which rides downhill into the streams and creeks that eventually lead to Cayuga Lake. One of the keys to determining the impact this debris will have on a given stream is the quality of the stream's riparian buffers. Riparian buffers are the vegetated areas along stream banks, and they are crucial because they filter contaminants from water runoff before it reaches our waterways. The riparian zone of a given stream, creek or river bank is by definition periodically flooded above ground, with a saturated groundwater table within 3 to 5 feet of the soil surface. This means that riparian zones are most effective at filtering contaminants carried in water runoff when they are buffered by deep-rooted vegetation. Conversely, they are least effective when the buffer is missing and their banks lie bare and exposed.

Riparian buffers filter runoff and stabilize streambanks.

In addition to filtering runoff, woody vegetation helps to stabilize stream banks during floods. Tree and shrub roots act like huge fingers to hold back streamside soil that might otherwise be washed away. Vegetation that overhangs the stream slows water during high-flow periods and also cools it, keeping it hospitable for trout and other fish. Insects, wildlife, and birds use vegetated stream banks for food, protection, and transportation corridors.

If you own streamside property, take an inventory of the plants already there. If your riparian zone contains invasive species such as purple loosestrife or Japanese knotweed, these should be removed before other species buffer are planted (see knotweed article, this issue). Many invasive plants disperse quickly along stream corridors.

For property owners with a small streamside lot, buffer landscaping and stream bank

continued on page 4

WATERSHED STEWARD'S MESSAGE

By Sharon Anderson, Watershed Steward

Trickling, flowing, winding, and thundering, water rushes ever downwards gathering into creeks and streams that flow to Cayuga Lake. In this newsletter we focus on those creeks as a reminder that the watershed is far more than the lake.

Worries about rising waters and damage to property are greatest in the spring. Flooding is not entirely an "act of nature", as you will read about in "It Takes a Watershed to Reduce Flooding!" While we can't – and don't want to – completely control flooding, those with shoreline properties can learn easy ways to increase their protection against the ravages of rising water in "Streamside Property Owners – Buffer Your Banks!".

When the Erie Canal changed the course of streams and connected Cayuga Lake with the far away ocean, transportation routes changed for more than commerce. Saltwater fish like alewife were introduced to fresh water, creating complex problems higher up in the food chain. "Intruders in Cayuga Lake: The Hidden Dangers of Introduced Fish" provides insight into this problem. Another invasive, Japanese Knotweed spreads rapidly along stream corridors, growing to thick stands that block out native plants. In "Japanese Knotweed: Invader of the Watershed", learn to identify them and reduce their spread.

In celebration of our magnificent creeks, join us this spring by helping with planting trees and cleaning up a creek. See "Announcements" for how to get involved!

AT WORK FOR THE WATERSHED

In order to find out how much sediment and phosphorus moves during storms, Cayuga Lake Watershed Network sampled Six Mile Creek during four storm events. After our final monitoring event in December, measurements confirm that phosphorus and sediment are closely tied. Results from this work will be posted on our website. We also conducted eight workshops on well water and septic systems in four towns in Tompkins County. Scaling up to the whole watershed, a joint meeting was held between the Cayuga Lake Watershed Network and the Cayuga Lake Watershed Intermunicipal Organization. This non-profit and government team combined their Issues Committee and Technical Advisory Committee to streamline some of the underlying nuts and bolts of watershed management. The document guiding our process is the Cayuga Lake Watershed Restoration and Protection Plan.

The Watershed Network's outreach efforts have gone global! Our CD *Protecting the Cayuga Lake Watershed* has been taken on an exchange program to England by the Ithaca High School. And it now serves as a guide to help mobilize a watershed protection effort in Mexico. Back on the home front, all middle and senior high schools in the watershed have received copies of our CD as well as our publication *Issues in the Cayuga Lake Watershed* with this, our award-winning newsletter. Southern Cayuga Central School is using the two publications for 10th – 12th graders. Each grain of sand adds up to help the community think like a watershed!

Mark Your Calendar for Lakefest!

Cayuga Lake Watershed Network will hold its annual Lakefest **Sunday, August 21st, 12:00pm - 4:00pm** at Camp Barton! Please join us at this lake-side setting for a free picnic, music, activities for children and adults and the announcement of the 2005 David Morehouse Award. Throughout the afternoon enjoy the activities and displays from local organizations. Cayuga Lake Watershed Network's annual meeting, during which new members of the board of directors are elected, will take place during the event.

We hope you will invite your friends to join you for a great afternoon on the beautiful shores of Cayuga Lake. Camp Barton is just off Route 89 in Covert (to the north of Taughannock Falls). The Network News summer issue will have more details and watch our website, www.cayugalake.org for updates.

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Japanese Knotweed: Invader of the Watershed

By Tania Siemens, Cornell University

Flowing over land en route to Cayuga lake, streams are one of the most visible components of our watershed. Streams offer beauty and recreation as they transform into waterfalls and create favorite fishing spots. Unfortunately, as in many other watersheds nationwide, the integrity of streams within the Cayuga Lake watershed is threatened by the invasive plant Japanese knotweed.

Japanese knotweed *(Fallopia japonica)* was introduced from Asia for ornamental purposes and is now invading stream habitat in North America and Europe. Its hollow, bamboo-like stems grow rapidly (up to 12 feet tall) and form dense thickets along streams, shading native vegetation and blocking access to fishing holes. Japanese knotweed's enormous roots can extend 9 feet deep and are nearly impossible to remove. Its invasion along streams is aided by downstream transport of plant material during floods. Such events deposit roots and seeds in ideal places for knotweed growth: sunny and moist stream banks.

Photo by Michael Wilhelm

Knotweed (far bank) overpowers native riparian vegetation. Inset shows flower spikes.

Plants and trees that grow along stream banks – also called riparian vegetation – help to maintain good water quality, wildlife habitat and stream food-webs. Japanese knotweed interferes with the growth of native riparian vegetation, threatening the health of our watershed. Native riparian vegetation provides habitat for nesting songbirds and waterfowl, and numerous wildlife species. Tall riparian trees such as maple and cottonwood shade the stream, keeping the water cool and hospitable to fish. By preventing the establishment of native saplings, Japanese knotweed interferes with the long-term maintenance of riparian forests.

Trees not only provide good habitat for fish, but their annual contribution of leaves into the stream form the basis of the underwater food-web. Leaf litter accumulating on the stream bottom is soon colonized by algae and bacteria, which are grazed by aquatic invertebrates like caddisfly and dragonfly larvae. Because aquatic invertebrates are sometimes selective about what species of leaf they graze, the replacement of native leaves by Japanese knotweed leaves may result in a change in the aquatic invertebrate community. Since aquatic invertebrates comprise the primary diet of many fish, a change in aquatic invertebrate communities due to a shift to Japanese knotweed leaves can negatively impact fisheries.

How can we prevent the spread of Japanese knotweed? An important first step is to learn to identify it and determine if it is on your property. Next is deciding whether and how to control it. Tackling this aggressive invader is a longterm commitment, requiring hard work and at least two years of follow-up. A small patch (10 – 50 stems) can be controlled manually by pulling and digging surface roots or cutting stems close to the ground every two weeks. However, successful eradication of large patches usually requires herbicides due to knotweed's remarkable ability to resprout after cutting.

What does Japanese knotweed look like?

- Dense stands up to 12 feet tall
- Bamboo-like stems with knobby nodes along stems and stalks
- Alternate, bright green leaves with smooth edges, 1-8 inches wide
- Spikes of small, white flowers in late summer

Japanese knotweed is bad news for the Cayuga Lake watershed's ecological and aesthetic health. Without action, Japanese knotweed will degrade the splendor of the Cayuga Lake watershed: our beautiful streams.

ANNOUNCEMENTS:

National Drinking Water Week is here! (May 1-7). This national event is to promote awareness and encourage everyone to get involved in protecting one of our most precious natural resources: water. Events will include the 12th annual water taste test, games, hands-on displays and much, much more. To kick off this celebratory week, the Cayuga Lake Watershed Network will co-host several events. Volunteers are welcome to help with the annual **Fall Creek Clean Up on April 30th**. Last year, 38 volunteers from eight local community groups collected about a ton of trash, which was hauled to the transfer stations by the City of Ithaca and Town of Dryden! Volunteers are also needed to **Plant Trees on the Banks of Six Mile Creek, May 1st**. Tree roots anchor down soil, reducing sedimentation, which improves water quality.

Ronny Raindrop draws folks to Water Week

Upcoming W2O! Events:

- **Sun. April 24, from 12 - 5 pm.** Earth Day Celebration. Ithaca Farmer's Market.
- **Sat. April 30, from 9 - 11:30 am.** Fall Creek Cleanup. Volunteers needed!
- **Sun. May 1st, from 9:30 am - 2 pm.** Tree Planting to Stabilize the Banks of Six Mile Creek. Volunteers needed!
- **Fri. May 6. Times TBA.** National Water Week events. Check updates on TC Health Dept website: www.tompkins-co.org/health/
- **Sat. May 7, from 9 am - 2 pm.** National Water Week events. Ithaca Farmer's Market.
- **Sat. May 7, from 8:30 - 1pm.** Cayuga County Household Hazardous Waste Drop-Off, and Propane & Electronics Collection. Pre-register by phone (315) 255-1183 or email solidwaste@cornell.edu
- **Sat. May 14, from 8 am - noon.** Cayuga County Tire Collection (see May 7).
- **Thurs. June 23, from 7 - 8:30 pm.** Management of Aquatic Weeds: General training. Seneca Falls Library, 47 Cayuga St, Seneca Falls.
- **Wed. July 13, from 6:30 - 9 pm.** Training for volunteers against invasive water weeds: Seneca Museum of Waterways & Industry, Seneca Falls.
- **Fri. July 15.** Morehouse Award Nominations due (see article, this issue).
- **Sun. August 21, from noon - 4 pm.** Lakefest! Camp Barton, Covert. Volunteers welcome! More details to follow in our summer newsletter.

Streamside Property Owners – Buffer Your Banks! *continued from cover*

stabilization must be balanced with access and views. Best options include using short, native shrubs to stabilize the bank while leaving a buffer of unmowed native grasses and wildflowers between the stream and mowed lawn.

For larger properties, a good streamside buffer can be established with three bands of vegetation. For Band 1, closest to the stream, you should have a minimum width of 15 feet of flood-tolerant trees and shrubs (eg. willows, dogwood, viburnum). If possible, Band 2 should be 60 feet wide and contain a mix of native trees and shrubs. Finally, Band 3 should be ideally another 20-foot wide buffer of native grasses.

For years, a common method for stabilizing under-cut stream banks was to use rocks either as riprap (large stones) or gabion baskets (wire mesh baskets filled with stone). While these slow bank erosion, they are less than ideal fixes. First, these methods are very costly and not very aesthetic. In addition, the water flowing past them speeds up and often causes erosion downstream. Lastly, stones do not have the water filtering capacity or provide the wildlife habitat that vegetation provides. Nonetheless, riprap, gabion baskets, and other drastic stabilization methods are sometimes the only option for a severely undercut bank or erosion that threatens the stability of nearby structures. For less severe erosion, there are more natural options available. In recent years, the use of "willow waddles" and other bio-engineering methods have been pioneered as more natural alternatives. These are bundles of branches tied together and placed at the water's edge. Bare-rooted willow whips are also used to stabilize wet areas along streambanks (see Willows, this issue).

For more information about constructing waddles and streamside landscaping, Cayuga Lake Watershed Network members can request a free copy of *Landscaping for Erosion Control* (available to others at a $2.00 charge for shipping and handling). The Cornell Department of Natural Resources has a series of pamphlets available called "Stand by your Stream." To access these on line, go to www.dnr.cornell.edu and type "Stand by your Stream" into the search box at the right of the page. Cornell Cooperative Extension of Cayuga County has a program available for streamside landowners called "Green Thumbs for Blue Waters", which includes a list of flood-tolerant plants. Visit http://www.cce.cornell.edu/~cayuga/Environmental.htm and click on the link for "Green Thumbs for Blue Waters" at the left of the page.

Nominations Sought for Morehouse Award

Dave Morehouse exemplified dedication and action. Throughout his life he worked to protect the lake that he loved. Each year his contributions are remembered via the David Morehouse Memorial Award, sponsored by the Cayuga Lake Watershed Network and the Cayuga Lake Intermunicipal Organization.

Nominations are being sought for people who are making a difference to protect the Cayuga Lake Watershed. It is not necessary for the nominee to live in the watershed. Nominee may be an individual, group or business. The Morehouse Award recipient will be announced at Lakefest, August 21st at Camp Barton.

Hocutt Receives 2004 David Morehouse Memorial Award
Gene Hocutt, retired Director of the Montezuma National Wildlife Refuge, was honored for his years of leadership and environmental stewardship in this watershed. In addition to his work in the refuge, he helped found the Finger Lakes Ecology Association. Through his brokering skills, Hocutt mobilized local citizens and people with permitting and regulatory power to expand the marshland at the refuge, ensure protective guidelines for the Seneca Meadows Landfill operation, and worked to optimize lake level management.

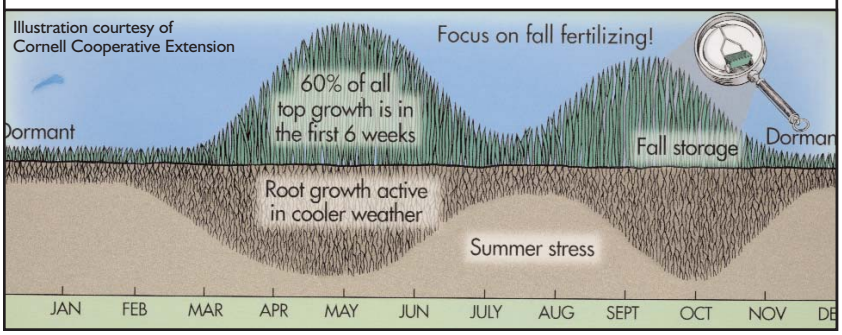
Award Criteria
- Active role in restoration and protection of our water resources over time (minimum 5 years)
- Leadership in an endeavor that has lasting effect

Nominations must be submitted to the Cayuga Lake Watershed Network by **Friday, July 15th, 2005**. Electronic submissions preferred. Send to manager@cayugalake.org or Morehouse Award, P.O. Box 303, Interlaken, NY 14847.

DID YOU KNOW?

A well-established lawn rarely needs fertilizer. If you are repairing or re-seeding, optimize fertilizer power by using it only in the fall around Labor Day. For rare cases requiring more, the best biannual fertilization scheme is to apply one dose of fertilizer in the spring around Memorial Day, and the second in the fall as mentioned. Use the least amount needed. Among other concerns, this helps minimize excess phosphorous – and the problems it causes – in the watershed!

Grass growth chart shows more root activity in cool weather. Fertilize only in the fall!



Meet the Board

The Board of Directors is composed of 15 members. Four Directors are elected from each of the three counties with lakeshore properties (Cayuga, Seneca and Tompkins). Three other Directors may reside anywhere in the watershed.

Brian Boerman (At-Large) works with Agricultural Consulting Services as a certified Agricultural and Environmental Management Planner and Certified Crop Advisor. He grew up in Wayne County, New York and attended SUNY College of Environmental Science and Forestry. Previously, Brian worked with threatened and endangered species in Oregon and Washington States. He also worked with the U.S. Forest Service as a Forest Biologist. Brian moved to the Cayuga Lake watershed in 1999 and has since settled in with his wife and baby. He notes, "My job calls for me to develop and help implement a plan for forestry and agriculture to operate profitably within the guidelines of The Clean Water Act. Charged with this duty I feel responsible to work with all parties throughout the watershed to achieve the goals of environmental sustainability and economic success."

Connie Tallcot (Cayuga County) has been a member of Cayuga Lake Watershed Network since it's founding. This is just one of many ways she contributes to the community where she grew up. Her list of involvements includes serving with the Union Springs Village and Planning Boards, the Frontenac Historical Society, the Cayuga Museum Board, and the Cayuga County Planning Board. She was co-founder and Director of the NYS Route 90 Small Business Association. Upon joining the Board Connie stated, "I welcome the opportunity to work with the members, provide support to the staff, learn more about the watershed and help develop methods to help the public appreciate just how important the watershed is to everyone's future."

Members are welcome at Board meetings, which begin at 7 pm. The next ones will be: May 12 at Goulds Pumps in Seneca Falls; June 9 at the Old Jail in Ithaca.

Intruders in Cayuga Lake: The Hidden Dangers of Introduced Fish

By Jesse Lepak, Researcher at Cornell University

Most people consider bait fish to be a good thing. They provide food for game fish and, as the name suggests, bait for anglers. The more the better, right? Well, that is not always the case. There is a hidden danger swimming in the waters of Cayuga Lake.

In the early 1990's an alarming discovery was made in Cayuga Lake that held repercussions for the Great Lakes and far beyond. Two of Cayuga Lake's native game fish – landlocked salmon and lake trout – were experiencing massive die-offs shortly after hatching. This phenomenon, now known as Cayuga Syndrome also turns out to affect other species related to salmon and trout (including rainbow trout and coho salmon in the Great Lakes). The cause of Cayuga Syndrome remained a mystery for several years. Only recently have investigations found that an introduced bait fish, the alewife, is at the root of the problem.

Researcher Jesse Lepak releases a lake trout. Its offspring are at risk from Cayuga Syndrome, caused by eating introduced bait fish.

Alewife – sawbellies as they are known locally – were originally salt water species introduced as bait fish to Cayuga Lake's fresh water. They currently provide the main source of food for salmon, lake trout and several other game fish. It turns out that alewife contain an unusually high level of thiaminase, an enzyme that breaks down thiamin – or vitamin B1. This enzyme is essential for the successful reproduction and survival of nearly every organism. Alewife are seemingly unaffected by the thiaminase. But when salmon and lake trout consume numerous alewife, the thiaminase they contain causes the predators to become thiamin deficient. High thiaminase rarely causes direct mortality in adult salmon and lake trout, however, their offspring do not make it to adulthood.

Cayuga Syndrome is very widespread and some have speculated that it is the main cause of the crash in Great Lakes lake trout populations - instead of over-fishing or parasitism by introduced sea lampreys, as was previously believed. Salmon species as far as the Baltic Sea are also suffering from Cayuga Syndrome. This sparked research on other bait fish species and it was found that fish like smelt - yet another introduced species in Cayuga Lake – and gizzard shad also had high levels of the destructive enzyme. Interestingly, this phenomenon has also been documented in species other than fish. Alligators in the American Southeast that have a diet composed mainly of gizzard shad are suffering from the same type of reproductive problems seen in Cayuga Lake salmon and lake trout.

The response to this problem in New York and other regions has mainly been to increase stocking to supplement the suffering game fish populations, and treat adult fish with thiamin in order to increase offspring survival. Although the outcome has been successful, it is extremely time consuming and costly.

Since both alewife and smelt were originally salt water species, it is now believed that they may have increased thiaminase content in response to stress from living in fresh water. As seen with pollution, changes in water characteristics may also provoke stress in fish. It is important to realize that the effects of introduced species on native communities can be difficult to recognize and predict. The alewife presents a perfect example. Be aware that releasing non-native species may seem harmless (or even helpful). But this "helpful" gesture can have long-lasting and extremely harmful effects on native species. Our remaining intact native fish communities are among the most precious resources available for our use and enjoyment. Let us keep them in mind and protect them for future generations.

You can help keep harmful introduced fish species out of the watershed!

- Learn to identify Cayuga Lake's native fish and avoid spreading non-native species.
- Do not release live alewife into lakes that do not contain them.
- Try native shiners or suckers as bait where alewife have not been introduced.

Get Those Willows to Hold Down the Soil!

Shrub willows only reach 12 feet in height, but their roots work wonders, holding soil in place against the force of fast moving creeks (see streamside article, this issue). Would your property benefit from planting 18-inch willow whips that would hold the soil in place rather than letting it wash downstream?

Each year, the Cayuga Lake Watershed Network oversees securing, distribution and planting of 1,500 shrub willows along streams that have public fishing access. Less erosion means clearer water. Shade provided by these trees also provides cool water for fish that like it (eg. trout). The Cayuga Lake Watershed Network receives the willows in the end of April/early May. Stocks are free, but limited. If you want to plant along any stream with fishing access, contact our office at (607) 532-4104. A brief educational session will be held for all planters – kids and adults alike – about soil erosion, simple techniques to prevent it, and how to restore eroded areas. Willows are supplied by NYS Department of Environmental Conservation.

Members Keep Network Strong

During National Water Week (May 1-7) we will kick off our renewal effort for the upcoming membership year that runs from July 2005 to June 2006. You can help by using the envelope inserted in this newsletter to join or renew now.

Members are the heart of the Cayuga Lake Watershed Network. Your support allows us to continue our work of teaching school youth, cleaning up streams, forging collaborations among diverse groups, supporting municipal officials, and bringing you timely information. All this is in the interest of preserving the environmental health and quality of life in the area that we love! The watershed is more than the lake itself, jewel that it is. It is also the tiny streams, changeable creeks and the ground water that quenches the thirst of so many.

It Takes a Watershed to Reduce Flooding! *continued from back cover*

from a heavy rainfall has no place to go. It increases in volume and begins to rush in a phenomenon we know as stormwater runoff.

Wherever the flow finds blockages – from artificially constructed flood banks, to clogged storm drains, to snagged branches stuck in a river, the chance of flooding increases nearby. In a natural setting, most rivers can retain flood flow within their banks. But every two years or so, storm events cause the water volume to build up quickly, flooding the land surrounding the river channel – the riparian area. Flat riparian areas, called flood plains, are the river's design to address areas that flood regularly. Flood plains are beneficial for downstream locations as they retain large amounts of water that would otherwise add to the flow.

Unfortunately, many houses are built on floodplains. Residents of these houses often press to protect their property by building flood banks. In many cases, this actually intensifies the degree of flooding downstream. Artificially constructed flood banks usually detain small or intermediate floods (every few years), but can fail under serious flooding conditions (every 50 years or so). Under such conditions, flood plain property once deemed safe is often worse hit than it would have been without the artificial banks - no easy solution here. For some, flood warnings are issued to save people, pets and precious possessions.

The best solution to flooding is prevention. Due to the free flow of water through most properties, watershed work automatically involves community coordination. As individuals, we can take action to reduce the chances and impacts of flooding. In some cases, these actions will help alleviate the flooding of people further downstream before they affect your property directly. It follows that when others do the same upstream of you, the favor is returned. In some communities, property owners share "work parties" to help one another improve the capability of their property to absorb water and reduce flooding along the water's course.

Sustainable urban drainage design uses techniques that ensure that the flood flows downstream do not increase. Such design includes permeable tarmac surfaces, grassy hollows that absorb flood from heavy rain storms, and water storage areas below parking lots. Ithaca is one of three cities in the nation to develop a model parking lot designed to help reduce flooding. It will be built at the trailhead of the Cayuga Waterfront Trail and its completion is anticipated by the end of the construction season. This is one of many innovative actions that will help us effectively address flooding as a natural force.

It Takes a Watershed to Reduce Flooding!

By John Mawdsley, Consultant Hydrologist

People who have been flooded remember it well and don't look forward to it happening again. They want to know what they, or others, can do to stop it. Fortunately for those living in the Cayuga Lake watershed, flooding is rarely life threatening but it can be frightening, stressful and expensive. So what can be done?

First, it helps to understand the source of the problem. Flooding almost always results from heavy rainfall or rapid snowmelt. However, heavy rainfall does not always cause flooding. If the ground is dry or very porous, much of the rainfall will be absorbed by the soil. If the ground is already saturated, or if it has been sealed by construction (eg. parking lots, roads, and building rooftops), the water

continued on page 7

Too much water plus not enough porous soil adds up to a pounding flood

Think prevention! Take action to reduce the frequency and impact of flooding:

- If you are considering building, make sure the proposed site is not in a floodplain.
- Avoid creating new impermeable areas. For patios, parking areas and walkways around your home, try using gravel, bricks spaced with grass, or other porous options.
- Direct flow from roof gutters toward vegetated, porous areas where water can soak into the soil. Your lawn can act as a great sponge. Maximize its ability to catch and hold water by keeping it healthy.
- If you have wet areas in your lawn don't drain them. Consider a rain garden that will help detain the flow and enhance your property.
- If you own land adjoining creeks, try to keep debris and fallen tree trunks out of the creek channel (within the range of safety!).
- If you own woodland, do not clear-cut the trees, and do not replace large areas with grass – trees hold back runoff better than lawns.
- Support local government efforts to provide stormwater ordinances and protective legislation for wetlands.
- Retain wetlands on your property. If your land is graced with unusually large wetlands, you might consider a conservation easement.

The Mission... *The Cayuga Lake Watershed Network seeks to protect and improve the ecological health, economic vitality and overall beauty of the watershed through education, communication and leadership.*

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