

# Esopus Creek NEWS

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COOPERATIVE EXTENSION  
ULSTER COUNTY

Esopus • Birch • Bushnellsville • Fox Hollow • Peck Hollow • Broadstreet Hollow • Woodland Valley • Stony Clove • Beaver Kill • Little Beaver Kill • Traver Hollow • Bushkill

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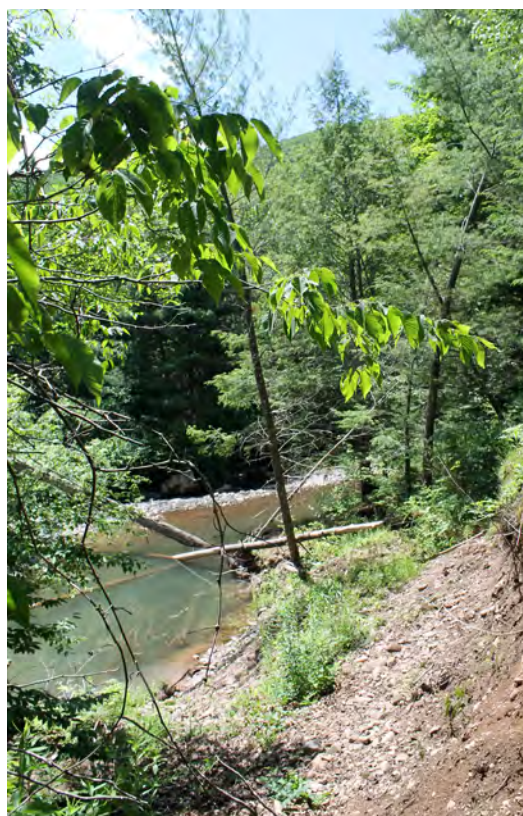
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## RESTORING WARNER CREEK TO A HEALTHIER STREAM



While early summer rains have caused some delays, two large stream restoration projects are set to begin on Warner Creek in Silver Hollow near Chichester, NY in August. The projects aim to restore segments of Warner Creek to a stable and more functional condition about 1.3 miles upstream of where Silver Hollow Road intersects with State Route 214. Work should continue through October. The two projects combined will restore 1,100-feet of stream channel and four acres of stream corridor to a healthier state.

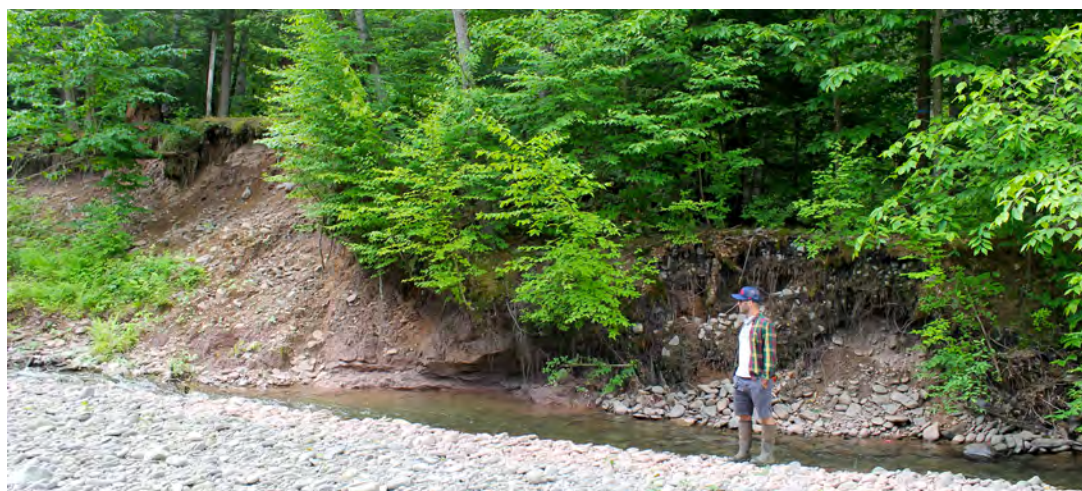
The Ulster County Soil and Water Conservation District (SWCD) is overseeing implementation of the projects that will cost around \$750,000 to construct. Funding for the stream restoration projects is provided by the NYC Department of Environmental Protection as part of its Stream Management Program.

The stream program has monitored the Warner Creek for years. The sites became particularly unstable following floods in 2010 and 2011.

*Cont. on page 2*

*Floods caused the Warner Creek channel to shift into a previously forested floodplain. Once stream flows began cutting into finely textured soils, the sites became a water quality concern.*

*The creek inhabited by fish needing cool water to survive, is now running shallow over heated rocks at the sites.*





## Warner Creek Stream Restoration

When the stream program began monitoring the sites a person could easily hop across the creek, but 10 years later the channel has widened to more than three times its original width.

Warner Creek flows through Silver Hollow into the Stony Clove Creek at Chichester, which empties into the Esopus Creek at Phoenicia. Both streams are historic trout fisheries and recreational destinations that feed New York City's Ashokan Reservoir in northwest Ulster County.

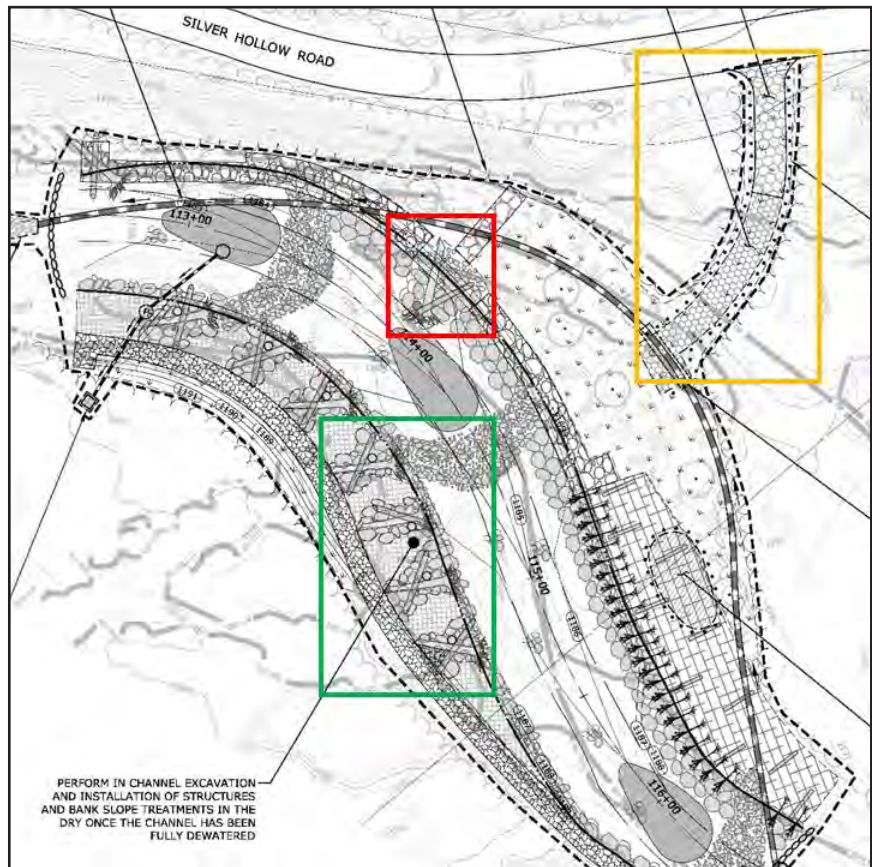
The Ulster County SWCD hired SLR Engineering to develop restoration designs for the stream channel and banks. A construction contract was awarded to Baker Brothers Excavating, Kingston Equipment Rental in Hurley, NY to install both projects.

The projects will re-create pool and riffle features. These natural stream features stabilize the channel bed and provide fish and aquatic insects with the habitat they need.

The benefits should extend well beyond the sites. In addition to improving water quality as far away as the Ashokan Reservoir, the projects should reduce an upstream source of cobble and wood that might otherwise cause erosion where it accumulates at downstream properties.

The SWCD will monitor the sites for years after construction to evaluate how the projects perform and to make repairs if necessary. The U.S. Geological Survey will monitor suspended sediment and water quality above and below the project sites. The NYC Department of Environmental Protection is monitoring channel condition and water quality in both Warner Creek and Stony Clove Creek.

For more information, the stream program office in Shokan, NY can be reached at (845) 688-3047 or [info@ashokanstreams.org](mailto:info@ashokanstreams.org).



*The image above is the design plan for one of the Warner Creek project sites, courtesy of SLR Consulting, the design engineering firm. The construction entrance is outlined by the orange box, with buried floodplain trees outlined in green and root-wad revetment in red. Restoration designs call for the current flat and over-wide channel to be narrowed. The restored channel will once again occupy the former floodplain and will remain located away from Silver Hollow Road.*

## What residents should expect during construction



Residents and visitors to Silver Hollow this summer will notice construction activities for both the stream restoration projects described here and a county bridge project. Large-scale construction efforts like these result in increased road traffic, especially heavy construction vehicles, on our winding Catskill mountain roads. Residents are encouraged to spread the word to friends and neighbors about the increased traffic hazards during construction season.

Stream restoration projects also involve removing trees, although disturbance is limited to the smallest area possible. Trees need to be felled to create construction entrances and to make room for heavy machinery to maneuver. Many of these trees make their way back into the project, either buried in the newly constructed floodplain to help stabilize the area or as root-wad revetment, a natural form of stream bank erosion control. The sites will be revegetated at the end of construction.

## Risk Rating 2.0: A Flood Insurance Transformation



The National Flood Insurance Program (NFIP) has been in existence since 1968 and along with providing Flood Insurance Rate Maps (FIRMs) that show where flooding is likely to occur, it has also made flood insurance accessible to everyone in the United States who lives in a community that participates in the NFIP. However, the rating methodologies for NFIP flood insurance have not changed since the 1970s and many critics of the program have said that it is unfair for some policy holders and does not always reflect the true risk of flooding for certain structures.

With all this in mind, the Federal Emergency Management Agency (FEMA), the agency in charge of managing the NFIP, will be rolling out a new methodology to rate NFIP flood insurance policies this year. They are calling it Risk Rating 2.0.

The goal of Risk Rating 2.0 is to make flood insurance more equitable and the rating of flood insurance policies more transparent and easier to understand for both policyholders and insurance agents. Currently, flood insurance is rated based on if a structure is in a mapped flood zone and the structure's first floor elevation. Risk Rating 2.0 will now consider several variables including: flood frequency, multiple flood types (river overflow, storm surge, and coastal erosion, to name a few), distance from a water source, along with property characteristics such as elevation of a structure and cost to rebuild.

The Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowners Flood Insurance Affordability Act of 2014 put flood insurance on a glide path to actuarial rates making flood insurance increasingly unaffordable for many policyholders. Risk Rating 2.0 provides the opportunity for some policyholders (especially those of older structures) to lower their flood insurance burden. Right now, policyholders with homes that are lower in value tend to pay more than their fair share of flood insurance premiums while policyholders with higher value homes have tended to pay less. Risk Rating 2.0 hopes to make payments more equitable by considering costs to rebuild and a structure's unique flood risk.

Starting on October 1, 2021, new flood insurance policies will be subject to the new rating methodologies of Risk Rating 2.0. Policyholders looking to renew will be able to renew under Risk Rating 2.0 at that time. Starting after April 1, 2022, all policyholders will be rolled into Risk Rating 2.0.

### Online Resources:

For more information on Risk Rating 2.0, visit the FEMA website devoted to the topic: <https://www.fema.gov/flood-insurance/work-with-nfip/risk-rating>. If you are a flood insurance policyholder, be sure to speak with your insurance agent about how the new methodologies will affect you.



*Family Fun and Fish Day returns September 18!*

## Ashokan Watershed Month is this September and October!

In celebration of everything great about the Ashokan Watershed, the stream program is planning a series of events from mid-September to mid-October. AWSMP will be hosting three days of events for landowners, youth and families, and municipal officials. With Covid-19 restrictions finally lifting (a bit), AWSMP is especially pleased to offer several in-person, outdoor events.

On September 11, AWSMP will be at Olive Day located at Davis Park in West Shokan. See us at a table with brochures and handouts describing our program services. Stop by and talk with the staff and learn how you can best manage your streamside property whether you are a veteran streamside landowner or new to riparian living. We also hope to host a special talk on stream buffers and our Catskill Streams Buffer Initiative (CSBI) program.

On September 18 AWSMP will be at Kenneth Wilson State Campground in Mount Tremper where we're bringing back, albeit in a smaller, more socially distanced way, AWSMP's popular Family Fun and Fish Day that was cancelled last year due to Covid-19 restrictions. This year participants can still experience fishing free of charge with no need for a fishing license. NYS Department of Environmental Conservation (NYSDEC) staff will be on hand to loan tackle and bait or bring your own if you have them. We're also offering a short stream walk along a tributary to the Little Beaver Kill and other activities during the event.

On a date to be determined in October, AWSMP will meet with municipal officials where they will learn more about managing stream sediment. We'll discuss recommendations in the Local Flood Analysis (LFA) documents to help communities be more resilient to flooding and how AWSMP can help to implement them. A field site visit for watershed officials will also occur in Phoenicia.

We hope to see you out at one or more of our planned activities for Ashokan Watershed Month. For more information, please contact Brent Gotsch at [bwg37@cornell.edu](mailto:bwg37@cornell.edu) or call 845-688-3047 ext. 103.



## FIELD NOTES

### Congrats 'Senior Watershed Detective'!

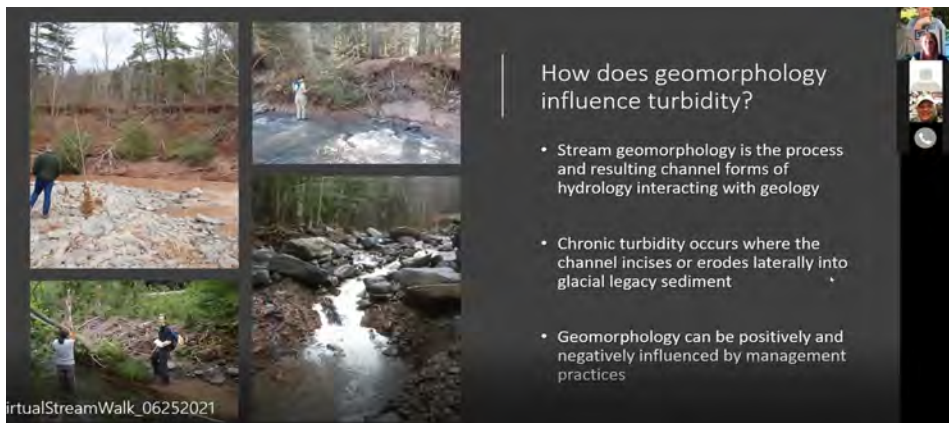


The AWSMP recognized Onteora School student Sadie Konjas with a certificate of achievement for completing her 4th consecutive year in the Watershed Detectives program - the longest tenured participant in the 10-year history of the program!

Sadie started attending the after-school program in the 4th grade and was a 7th grader this year. The Watershed Detective program was originally open to 4th through 6th graders and in 2021 expanded participation to 7th and 8th grade students.

Watershed Youth Educator Matt Savatgy and 4-H Youth Educator Matt Helffrich with Cornell Cooperative Extension of Ulster County deliver the program at several locations in the Ashokan watershed, including Onteora school grounds when conditions allow. The program features hands-on, outdoor science activities, interactions with guest scientists and natural resource managers, and science communication projects. The Detectives produce an educational science video each year that is shown to Onteora's entire K-6 student body and published online for formal and informal educators to use. This year's video "Snapshots from the Field" will be released later this summer.

### The Deeper Source of that Cloudy Water



In the last edition of the Esopus Creek News we reported that scientists at the U.S. Geological Survey continue to monitor the amount of fine soil particles (sediment) suspended in water causing turbidity, a measure of water clarity, in the Ashokan Reservoir watershed. A large portion of the suspended sediment causing turbidity originates from erosion of the banks and beds of stream channels. See the article "Why Do Streambanks Erode" on page 7 of this newsletter for more information on the process of erosion.

But the presence of fine sediment, like silt and clay, found in streambanks and beds is largely determined by the region's geologic history.

Participants of the AWSMP's first ever "Virtual Stream Walk" held online June 25

learned more about the region's geology and why it's important to manage the form of stream channels to prevent excessive erosion of fine sediment.

During the event, Allison Lent, AWSMP's Stream Assessment Coordinator and Dany Davis, a geologist with the NYC Department of Environmental Protection, discussed why so much attention has been paid to the Stony Clove and Warner Creek drainages in the Ashokan watershed. During the last ice age, these valleys contained glacial lakes where large amounts of clay particles were deposited in the still meltwaters. When these ancient clay deposits are exposed to modern stream flow, they are the primary cause of stream turbidity (cloudy, opaque water) in Ashokan watershed streams.

### Interns in the 'Shed (that's the Watershed)



*AWSMP thanks our seasonal field crew for their hard work surveying streams this summer!*

AWSMP's stream survey and monitoring effort was helped this year by three seasonal interns (from back to front) Mark Tollefson with the Student Conservation Association and Dayna Kelly and Alex Torres with the SUNY Ulster Watershed Conservation Corp. They assessed 14,600 feet of the Panther Kill stream, and surveyed 40 stream cross-sections, over 2,500 feet of longitudinal profile, riparian vegetation survey, and more at stream project sites.



Photo by A. Bennett

## State Route 28 Mt. Tremper Bridge Enlargement Nearing Completion

Replacement of the NY State Route 28 bridge over the Esopus Creek in Mt. Tremper with a taller and longer bridge is nearing completion. The new bridge is now open to traffic and the old bridge demolished. Replacement of the bridge was an expensive but high priority flood mitigation action recommended in the 2016 Local Flood Analysis for Phoenicia and Mt. Tremper. The flood study was carried out by the Town of Shandaken with assistance from AWSMP through the Local Flood Analysis program.

In 2016, the town's engineering firm Milone & McBroom, Inc. (MMI) met with NYSDOT officials to discuss Local Flood Analysis findings. The bridge was on the Governor's Critical Scour List and in the pre-planning stage for replacement.

Continued discussion resulted in a seemingly long-term flood mitigation solution in the Town of Shandaken moving to implementation in a surprising and relatively short period of time.

The NYSDOT continued to coordinate with Shandaken, MMI, Ulster County, and the NYS Department of Environmental Conservation to complete bridge design in 2019 and construction in 2021. The new bridge is longer at 800 ft with five spans than the old bridge at 366 ft with four spans, and reduces the number of piers in the creek from two to one pier.

In addition to substantially enlarging the bridge, the project elevates and reconfigures the intersection of Route 212 with Route 28 and removes a NYSDEC flood control berm to allow stream flows back onto the floodplain. The combined actions will lower flood elevations in the hamlet of Mt. Tremper.

The Town of Shandaken is now forming a committee to develop a recreational plan for properties the town acquired at the bridge site to increase recreational access to the Esopus Creek, including fishing access at the former location of the Rock Cut Cottages.

## Stream Explorers Youth Adventure - Time Outside Learning

AWSMP was excited to offer our all-day youth conference Stream Explorers Youth Adventure again in 2021. While it was extremely hot on June 5, the 41 participants grades 3-7 and parents alike expressed gratitude for an opportunity to be outside, interacting with other children in a "normalish" setting, which is something many of them were not able to do for almost 15 months.



Photo by M. Savatgy

## Maltby Hollow Bridge Replacement Progressing



In other bridge replacement news, the Ulster County Department of Public Works (DPW) is replacing a bridge on County Route 42 or Watson Hollow Road over Maltby Hollow Creek in the Town of Olive. This bridge was identified as a flood mitigation priority in the Town of Olive's 2017 Local Flood Analysis for Boiceville and West Shokan. Local Flood Analysis is a funding and technical assistance program developed in the NYC Drinking Water Supply Watershed by county governments, non-profit partners, and the NYC Department of Environmental Protection in response to a spate of destructive and frequent flooding that occurred between 2005-2011.

One of the flood mitigation actions identified for the West Shokan hamlet was enlargement of the Maltby Hollow bridge to prevent flooding and erosion that is caused by blocked flows. The bridge was constructed in 1957 with a 61-ft span that can pass the 100-year storm event if not blocked by large wood and debris. Blockage reduces the capacity of the bridge, causing it to overtop with water. Construction of the new 100-ft span bridge was modeled to pass the 500-year storm flow or the 100-year flow with a 50% blockage. A larger bridge was warranted due to the amount of road traffic and an 80-minute detour caused by bridge closure due to flooding.

A temporary bridge will allow traffic to cross Maltby Hollow Creek during construction that is scheduled for completion in 2021.



## Getting to Know Streams: WHY DO STREAM BANKS ERODE?

Why do stream banks erode? The simple answer is because the erosive power of the flowing water exceeds the forces acting to keep the bank material in place. However, there are different causes of erosion, and understanding those differences allows for better management of streams and their banks.

Stream bank erosion is a natural and ultimately unavoidable process. However, human activities can speed up the rate of erosion and property loss. It's therefore important to understand and be able to observe the differences between natural stream bank erosion and that influenced by human activities (anthropogenic).

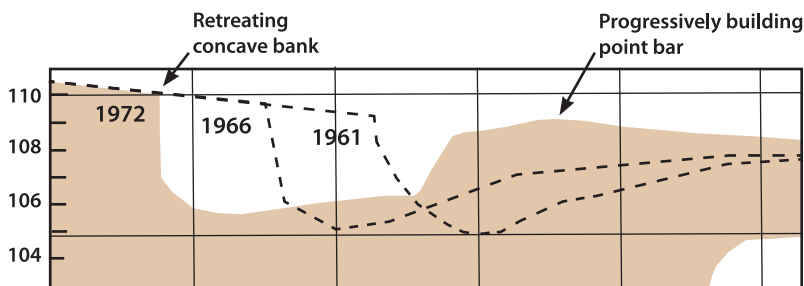
In naturally stable streams with healthy riparian vegetation, lateral bank retreat (i.e., property loss) from erosion is gradual, often measured in inches per year, even in years with significant flood events. In addition, natural erosion is typically balanced by a similar amount of deposition. So, while the bank may be eroding on the outside of a meander bend, a point bar on the inside of the bend is building at the same rate. In this way the stream channel maintains its cross-sectional area and rough shape while slowly migrating across the valley floor over time, as seen in the illustration below.

Anthropogenic erosion occurs when human activities amplify the rate and magnitude of erosion, disrupting the delicate balance between streamflow and sediment that defines a stable stream. Human activities that can intensify stream bank erosion include watershed development, riparian vegetation removal, and disconnecting streams from their floodplains.

Anthropogenic erosion is often rapid and dramatic, especially during and after flood events, when a stream bank can retreat tens of feet in a matter of hours. This type of bank erosion is not balanced by point bar deposition nor do the channel dimensions remain the same.

While some stream bank erosion is unavoidable, in some circumstances it can be mitigated to protect property and infrastructure. Rock walls and rip-rap (loose stone placed on the bank) can temporarily reduce bank erosion. However, rock structures redirect erosive forces downstream rather than reduce the shear stress that causes the erosion.

*Cont. on page 7*



*Progression of an eroding stream bank that is eroding on the left while the point bar is building on the right. Notice the similar cross-sectional area over time. Illustration adapted from "A View of the River" by Luna Leopold (1994, 6th ed., pg. 8).*

## Learn More About Streams and the Ashokan Watershed This Summer!

Are you searching for some fun, family-friendly, outdoor activities this summer, but want to avoid large crowds? If so, the Ashokan Watershed Adventure might just be what you are looking for. This self-guided tour has 11 potential stops spread across the Ashokan Reservoir watershed where you will learn more about the history of the Esopus Valley, how streams work, aquatic ecology, and the geology of the area.

You can earn cool prizes after visiting 4, 8, or 11 stops if you either post a photo-



*Photo by A. Cabanillas*

graph to social media and hashtag it with #AshokanWatershedAdventure or if you answer the essential questions in the Adventure Guide. For more detailed instructions you can find the Adventure Guide on the AWSMP website (see the links at end). Once you visit the watershed sites, contact the stream program office at (845) 688-3047 to arrange picking up your prizes.

If you want to learn more about streams and try some fun hands-on activities, check out our Watershed Detectives web-page (see link at end). This page contains numerous, short videos on a variety of stream-related topics that are accompanied by activity sheets that can be printed and taken to your favorite stream to try.

If you are stuck indoors on a rainy summer day you could learn all about some of the common critters that live in the area by exploring our Watershed Animal Spotlight series. Each page highlights a local animal species and is full of resources including videos, fact sheets, activity pages, and related links. The Bald Eagle, which is often spotted at the Ashokan Reservoir or along

*Cont. on page 7*





*Above: Photos on an unstable eroding stream bank from before (left) and after (right) a moderate flood event.*

The erosive force of flowing water is known as shear stress, a product of the depth and slope of the stream. The deeper and/or steeper the stream, the higher the shear stress and the more erosive potential the stream has.

the Esopus Creek and the American Beaver, which is typically hard at work along many of our watershed streams, are the first two animals in the series.

### Resources:

#### Ashokan Watershed Adventure Guide

<https://ashokanstreams.org/publications-resources/>

(scroll down for the Adventure Guide)

#### Watershed Detectives

<http://ulster.cce.cornell.edu/environment/online-science-series/watershed-detectives>

#### Watershed Animal Spotlight

<http://ulster.cce.cornell.edu/environment/online-science-series/watershed-animal-spotlight>



The forces acting to hold the bank together are influenced by several factors including the bank height and angle, the type of geologic material in the bank, and of course, the presence and quality of vegetation growing on the stream bank. The dense root systems of native riparian plants are exceptional at resisting erosion!

The best method of reducing stream bank erosion is by planting, maintaining, and/or improving native riparian vegetation. Healthy vegetation reduces the erosive forces near the bank rather than simply redirecting them downstream. Additionally, vegetated stream banks get stronger over time with the dense root systems spreading deep to hold the bank in place and reduce erosion.

# Esopus Creek News

## AWSMP UPCOMING EVENTS



### August 15

See our table at the Phoenicia Farmer's Market!

### September 11

Attend Olive Day at Davis Park in West Shokan and visit our booth from 9am-4pm, ask your stream questions, and join a fun family activity.

### October 9

Attend Longyear Farm Day in Woodstock and find our booth for activities and handouts.

### October 16

We'll be leading a watershed fall foliage walk for the West Hurley Public Library. Contact the library for more information.



Ashokan Watershed  
Stream Management Program



Cornell Cooperative Extension  
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