ASHOKAN WATERSHED STREAM MANAGEMENT PROGRAM

Winter 2022

Esopus Creek NEWS

PUBLISHED BY CORNELL 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

IN THIS ISSUE

UPDATED APPROACHES TO SEDIMENT MANAGEMENT

Boulders provide roughness in stream channels that breaks up flows and reduces stream power. They also provide cover and holding water for fish.

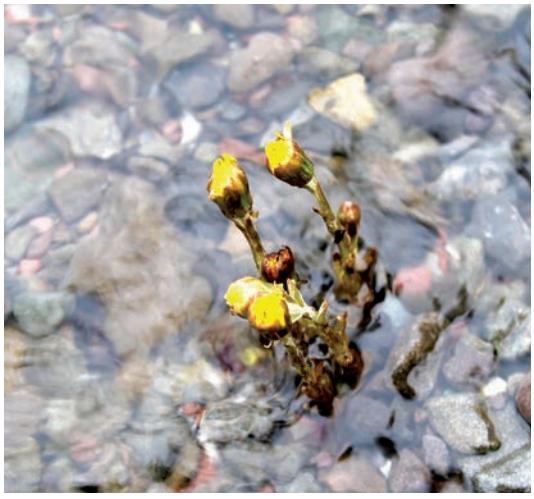
Catskill streams transport large amounts of sediment – boulders, cobble, and gravel downstream. Streams alternate between transporting sediment and storing sediment in their channels and on floodplains. Sediment is a natural feature of Catskill streams and an important physical component of fish and wildlife habitat. Sediment also plays a large role in stabilizing stream channels and preventing erosion.

However, the natural process of sediment transport and storage can be disrupted or occur at locations that interfere with public infrastructure like roads and bridges. The Sediment Management Stream Guide published by AWSMP outlines some of the basic physics that control sediment movement in streams, looks at the history of sediment management activities, and provides guidance on current best management practices. It is available for free download at https://ashokanstreams.org/publications-resources/.

Recommended management practices for sediment have changed somewhat over recent decades. Up until the 1950s, stream sediment was dredged, or mechanically removed, with support from federal and state agencies to reduce flooding by enlarging the stream channel. By the 1960s it became clear that even well-intentioned dredging projects were limited in their long-term effectiveness and were having negative consequences for fisheries, water quality, and stream channel stability.

The Sediment Management Stream Guide makes the distinction between dredging, and engineered sediment removal as part of stream channel restoration.

Dredging enlarges the stream channel. The problem is that channel excavation often triggers increased erosion of the bed and banks. Over time, this erosion can threaten the very



Gravel provides a substrate for aquatic insects, fish spawning, and if they can withstand the currents, aquatic plants.

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Sediment and wood trapped behind a boulder on a small floodplain. Streams that are properly sized and connected to floodplains can move and store large amounts of sediment without becoming unstable and excessively eroding.

roads, properties, and infrastructure the project was originally intended to protect.

In addition, overly large channels lack the power necessary to move sediment and fill back in after the next high flow event. This means dredging to manage sediment is a costly and repetitive process, often paid for by local governments and taxpayers.

Engineered sediment removal restores the stream's naturally stable channel dimensions. A properly sized channel can move much of the sediment load on its own, reducing the need for repetitive maintenance. If tempted to make the stream wider, the Stream Guide recommends the modern engineering practice of widening the floodplain instead of the channel.

Engineered Sediment Management at the Phoenicia Main Street Bridge

A perfect example of engineered sediment removal and channel restoration exists in the hamlet of Phoenicia and is easy to view from a public park located on Main Street and Route 214 where the Stony Clove Creek flows under the Main Street bridge.

Main Street bridge in Phoenicia, NY.

Historically, this bridge would get "plugged up" with sediment and the Town of Shandaken had to repeatedly dredge the stream to maintain the hydraulic capacity of the bridge. However in 2011, the town worked with AWSMP to fund a stream project that used engineered sediment removal and restored stable channel dimensions to the Stony Clove Creek near the bridge.

This Phoenicia Main Street project was recently put to the test by a near 10-year flood event on December 25, 2020. Previously, a flood of that magnitude might have triggered a need for dredging to regain space under the bridge for stream flows. However, surveys of the site conducted in early 2021 showed no significant accumulation of sediment after the flood, and thus no loss of bridge capacity following the flood. No excavators were needed because the restored stream did all the work.

Top Right: Engineered sediment removal underway in the Stony Clove Creek in September 2011.

Bottom Right: The same section of channel looking upstream from the bridge after engineered sediment removal and channel restoration. The stream channel is narrower and deeper. In the foreground, a rock cross vane directs high energy flows toward the mid-channel to carry water and sediment under the bridge. The stream is bordered by willow shrub plantings to hold the banks.

New to the Catskills? You Might Consider Flood Insurance

Over a decade ago in 2011, Tropical Storm Irene caused $7.9 million in damages paid to individuals and households in the towns of Shandaken, Olive, Woodstock, and Hurley. Those claims were paid to homeowners with flood insurance policies administered by FEMA's National Flood Insurance Program.

Any homeowner with a mortgage on property located inside FEMA's regulatory flood zone is required to carry flood insurance for the life of the loan. But what about homeowners just outside the flood zone or who don't hold a mortgage?

The FEMA regulatory flood zone corresponds to the "100-year" floodplain where flooding has a 1% chance of occurring in any given year. But roughly 20% of all flood insurance claims nationwide occur outside of the 100-year flood zone.

Riverine flooding is common in the Catskills and it's natural for rivers to overflow their banks and spill onto floodplains. See the graph below to gain a sense of how often flooding occurs in the region.

Even a small amount of home flood damage can be economically significant. An average 2,500 square-foot home that floods with just one inch of water averages $23,635 in damages (source: FEMA 2019). A smaller 1,000 square-foot home can suffer $9,550 worth of damage with one inch of water. Additional damage to the building's contents varies based on value. Over the span of 30 years a structure located in the 100-year flood zone has a 26% chance of experiencing a flood. This is a greater chance than experiencing a fire.

Any renter, homeowner or business owner in the watershed is eligible for a flood insurance policy through the National Flood Insurance Program. That is true even if the home is located outside the regulatory flood zone defined by FEMA. Rates can become more affordable depending on, in part, how far a structure is located from the flood source, such as a stream.

In addition to the National Flood Insurance Program, private flood insurance options are available that depending on a homeowner's personal circumstances, may be more advantageous in terms of coverage or premium cost. While the risk of flooding is lower outside the 100-year flood zone, it does exist, and flood insurance may be worth considering. Contact a local insurance broker for more information.

Sources of more information:

To access FEMA Flood Maps and determine if your structure is in a flood zone:

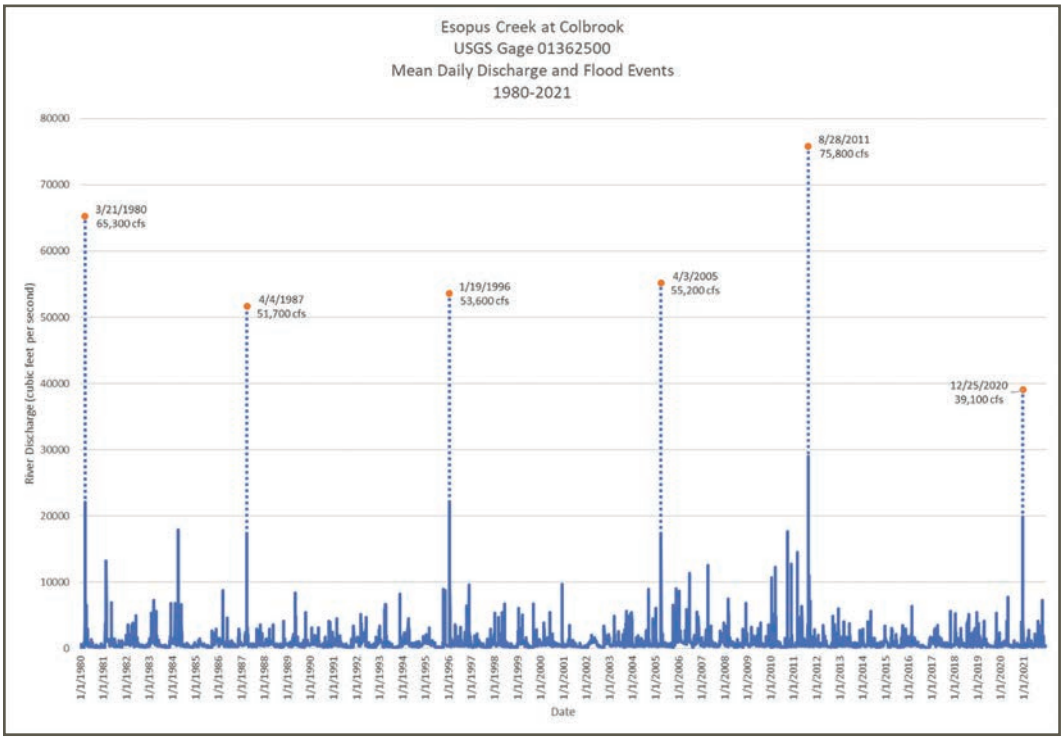
FEMA Map Service Center - https://msc.fema.gov/portal/home

National Flood Hazard Layer - https://bit.ly/3Bo0OpE

Ulster County Parcel Viewer - https://ulstercountyny.gov/maps/parcel-viewer/

To see how much water damage could cost you, even from just a few inches:

Flood Damage Cost Calculator - https://www.floodsmart.gov/cost-flooding



Graph: A recent history of flooding in the Ashokan watershed. This graph shows river flows measured at a hydrologic monitoring station on the Esopus Creek upstream of the Ashokan Reservoir in Coldbrook (your location may flood more or less frequently than Coldbrook).

The mean daily discharges (solid blue lines) are the average flow over the 24-hour period for that day, while the peak flow (dotted blue lines and orange dots) are instantaneous peak flows. The large difference between the mean daily discharge and peak discharge shows the "flashiness" of Catskills streams, that is, that water levels rise and fall quickly.

The Coldbrook gage has approaching 100 years of continuous data (monitoring started 10/10/1931). Six out of the 10 largest floods have occurred since 1980, shown here, including Tropical Storm Irene and the December 25, 2020 flood, which now holds the #10 spot.

FIELD NOTES

One thing to do while waiting for the electricity to turn back on is take an educational hike! The AWSMP's Snowshoe Stream Walk along the Little Beaver Kill was held on a snowy, icy day following the February ice storm. The walk explored the natural history features of streams and a crystalline forest fit for a fairy tale. Photo by Tim Koch.

Views from the Watershed

Check out the "Views From the Watershed" podcast - a self-guided audio tour of the New York City West-of-Hudson Water Supply Watershed. The 15-episode podcast tour covers a range of current watershed topics and features many notable Catskills names. AWSMP staffers Tim Koch and Aaron Bennett shared their professional views.

Aaron is featured in Episode 12, "Tough Choices." From a vacant lot in Boiceville, Aaron discusses the hard decisions faced by flood prone communities in the Catskills, and all over the country. He explains why building flood walls and dredging streams are no longer practical, affordable, or sustainable solutions.

Tim is in Episode #11 titled "Un-Muddying the Waters." Recorded at the Main Street bridge in Phoenicia, Tim discusses how a project designed to improve sediment transport was used to reduce flooding in a flood prone village (Phoenicia) built on an alluvial fan.

The Views from the Watershed tour is wherever you get your podcasts, or from walkingthewatershed.com.

One Hundred Seventeen

In his newsletter, local angler Ed Ostapczuk describes some of the outings where he caught at least one trout on a fly each month for 117 consecutive months: from April 2012 to December 2021. The final catch was made in West Shokan waters close to home. According to Ed, the quest that began in 2012 almost ended in March 2013, but instead was renewed:

"In March of 2013 I struggled mightily on a couple open NYS waters, plus battled the flu. I thought for sure the quest was over as less than a week of the month remained. Then a long-time buddy called inviting me to fish a New Jersey wild trout stream ...we caught little wild browns, mostly on a weighted #12 Epeorus Nymph.

Now with twelve consecutive months accounted for, mission was accomplished. Mentioning this feat to Chet Karatowski he told me that I needed to catch all the trout

By Ed Ostapczuk

in a single year, else it didn't count. I don't know who gave Chet authority to set the rules, but I took the bait, soon growing to love winter fly-fishing for trout. Eventually I managed twelve months in a single year and then wanted to achieve fifty consecutive months. Reaching that milestone, one hundred months was my next goal." Goal surpassed!

The upper Esopus Creek is now open for trout fishing year round with a Catch and Release season from October 16 - March 31 using artificial lures only. Who will pick up the gauntlet that Ed has thrown down!?

For more information on purchasing a fishing license and fishing for stream trout: https://www.dec.ny.gov/outdoor/62477.html.

Anchor Your Tank – Don't Watch it Float Away

If you own an oil or propane fuel tank you may be eligible to have it secured for free through the Catskill Watershed Corporation's Tank Anchoring Program. The tank must be located within the FEMA 500-year flood zone. Businesses and homeowners throughout the West of Hudson NYC Watershed are eligible. Anchoring, a process of securing the tank to a concrete pad, will keep the tank safe from damage and flotation during a flood. Preventing spills helps to protect water quality and human health.

The program secures oil tanks up to 330 gallons and propane tanks up to 420 pounds located outdoors or in basements. Larger commercial tanks may be eligible with approval. The program covers the full cost of anchoring. Landowners may hire a contractor of their choice.

To apply and for more information, contact John Mathiesen at 845-586-1400 or jmathiesen@cwconline.org.

New and Departing Staff with AWSMP

Recently, the stream program said goodbye to three long-term staff members who moved on to new career opportunities, and welcomed several new staff aboard.

Brent Gotsch.

Brent Gotsch, Watershed Educator with Cornell Cooperative Extension of Ulster County has taken the position of Technical Advisor for Reservoir Releases and Policy Development with the NYC Department of Environmental Protection, Bureau of Water Supply. Brent says about his time at AWSMP that he really enjoyed working with the town municipal officials, and particularly with town Code Enforcement Officers, Building Inspectors, and Floodplain Administrators, positions held in small rural towns often by one person. Brent delivered multiple flood mitigation trainings during his 10-year tenure with AWSMP, including several popular trainings on floodproofing, building elevation, and other floodplain management topics. Brent will apply his awareness of stakeholder issues and knowledge of stream management in his new position.

Tiffany Runge, a watershed technician with the Ulster County Soil and Water Conservation District for eight years is now working for a sustainability business in the Hudson Valley. Tiffany started with the AWSMP as a Watershed Conservation Corps intern in 2013. Tiffany says her favorite stream program work was in the field and outdoors. She particularly enjoyed walking the full length of streams during stream inventories, observing the diversity of stream conditions and fish and wildlife habitats, bedrock exposures, and landforms. Tiffany will continue working in the environmental field while being exposed to laboratory work and expanding her soils knowledge in the new position.

Aaron Bennett, an environmental planner with the Ulster County Dept. of Environment is now Deputy Chief in the Bureau of Water Supply, Watershed Lands & Community Planning for the NYC Department of Environmental Protection. Aaron's depth of local knowledge will be used coordinating flood mitigation programs across the West of Hudson NYC Watershed. Aaron is now stationed at the Catskill Watershed Corporation offices in Arkville. The AWSMP will continue to pull on Aaron's knowledge while Ulster County is hiring a backfill to continue assisting communities and residents with flood mitigation funding and planning in the Ashokan watershed.

Tiffany Runge and natural cross vane on the Bushnellsville Creek.

The entire staff wish Brent, Tiffany and Aaron the best and enjoyed working with them to deliver the AWSMP.

Now working with the AWSMP for Cornell Cooperative Extension of Ulster County, Laura Gust and Danielle ("Dani") White joined the staff in late 2021. Laura will coordinate administration of education and outreach, and Laura and Dani will assist with education program delivery. They bring excellent communication skills to the AWSMP and are working hard to become familiar with local streams, watersheds, vendors, and residents. The Ulster County Soil and Water Conservation District welcomes Mark Tollefson returning for a second year as Student Conservation Alliance intern and watershed field technician.

Welcome to Laura, Dani, and Mark!

Finding Natural Channel Design in Nature

Natural Channel Design (NCD) is a set of principles in stream restoration that aims to restore streams using the features found in naturally stable channels. After all, rivers are self-formed and self-maintained, or as pioneering river scientist Luna Leopold put it, "the river is the carpenter of its own edifice."

The stream project at the Phoenicia Main Street bridge mentioned earlier in this newsletter utilized a NCD structure known as a rock cross-vane to help the river move sediment through the bridge. A rock-cross vane is a channel spanning structure that arches upstream, with the limbs rising in elevation as they go from the low point at the center of the channel toward the bank. Cross-vanes reduce the water velocity and erosive power near the stream banks by directing flow toward the center of the channel and increasing sediment transport capacity.

While conducting a stream feature inventory on an unnamed tributary of the Elk Bushkill, itself a headwater tributary of the Esopus Creek, we came upon a naturally occurring rock cross vane. With no water in the channel, you can see the upstream arch, the rising limbs, and the downstream scour pool that would be a great place to cast a fly if there was water.

Using NCD in stream projects is like hiring the worlds best hydraulic engineer, the river itself.

Towns and county complete six stream and flood mitigation projects

Watershed municipalities overcame supply chain issues to complete six stream projects in 2021 addressing flooding and stream erosion, with funding assistance from the Ashokan Watershed Stream Management Program (AWSMP). The stream program provided $1,036,239 in grant funding for projects completed by the towns of Shandaken and Woodstock, and Ulster County. In addition, the AWSMP awarded five new grants to local municipalities for projects totaling $588,730.

Shandaken Supervisor Rob Stanley holds a plaque presented by FEMA to the town upon entry into the Community Rating System (CRS).

Projects completed in 2021 include:

The Town of Shandaken hired a consulting firm to prepare for entry to the National Flood Insurance Program's (NFIP) Community Rating System (CRS). The town entered CRS as a Level 8 community on October 1. All structures in the town with a NFIP flood insurance policy and located in the Special Flood Hazard Area will receive a 10% reduction on flood insurance. The Town of Shandaken is the first and so far, only community to be admitted to CRS in Ulster County.

Also, the Town of Shandaken enlarged a bridge over Peck Hollow for flood and erosion protection. The bridge now passes the 100-year return frequency flow with 1.9 feet of clear space, or "freeboard," between the waterline and bridge deck. AWSMP provided the town with local match to federal funds.

The Ulster County Department of Public Works completed a major project to enlarge the Maltby Hollow bridge on Watson Hollow Road (County Route 42). Replacement of the 1957 bridge was recommended in the Town of Olive's Local Flood Analysis for West Shokan (May 2017). The crossing serves dozens of homes, and residents would face a long detour if the bridge was closed. The new bridge can pass both the 500-year flow and the 100-year flow with 50% blockage. Its capacity now exceeds NYS standards for passing the 100-year projected future flow. The AWSMP funded bridge design and engineering, providing match to Ulster County and the Catskill Watershed Corporation.

Ulster County DPW installs a culvert on Watson Hollow Road in the Town of Olive.

The Ulster County Department of Public Works also replaced two under-sized culverts on Watson Hollow Road. The crossings were substantially under-sized, prone to overtopping and threatened road closure. The road is a primary travel route from Olive to the Town of Denning and the only means of emergency access from town facilities in West Shokan to residences along the Bushkill. The county installed new structures able to pass a 50-year peak flow and appropriate for aquatic organism passage.

The Town of Woodstock completed substantial construction of an enlarged bridge and channel stabilization in Mink Hollow near Lake Hill. The damaged bridge built in 1979 was replaced with a new bridge that conveys the 50-year storm flow with 1 foot of freeboard. The channel was stabilized with a cross-channel boulder structure and graded to build a small floodplain that buffers banks from erosion. Work will continue in spring 2022 to plant willow shrubs and further stabilize stream banks near the bridge.

Town of Woodstock officials meet for a pre-construction meeting with project contractors at the Mink Hollow bridge site in August 2021. From left to right: Pam Boyle, Heather Eighmey, John Stinemire, Bill McKenna, Adam Doan.

New grants for an additional six projects in the Ashokan watershed were awarded:

Located in the Town of Olive:

- Construction Phase Engineering Services for Burgher Road Crossing Enlargement, Town of Olive
- Engineering Design for Bostock Road and Red Maple Road Crossings, Town of Olive

Located in the Town of Shandaken:

- Local Flood Analysis for Pine Hill, Town of Shandaken
- Design and Analysis of Bridge Street Bridge Replacement in Phoenicia, Ulster County Dept. of Public Works
- Plank Road Culvert Replacements, Ulster County Dept. of Public Works

To learn more about Stream Management Implementation Program grants visit: https://ashokanstreams.org/projects-funding

Ready, Set, Action!

Watershed Detectives present 'Snapshots from the Field'

Students grades 4 to 8 in the Ashokan Watershed Detectives club have created a 20-minute science education video titled "Snapshots from the Field" to share with others the results of their stream investigations.

The Detectives produced the video over a two-month period with assistance of their club advisors and got involved with all aspects of the movie-making process. They worked as actors, script writers, directors, cue card holders as well as camera, light, and sound technicians.

The fun, action-packed video was produced with the assistance of retired Onteora teacher and now videographer David Laks. The video is useful for elementary school teachers, parents, and anyone who just wants to learn more about our water resources.

The video is divided into chapters that focus on how waterfalls are created, local drainage patterns, how stream sediment moves, the importance of hemlock trees and riparian zones, and how alluvial fans form. Students used a variety of equipment including underwater cameras to capture images for use in the video. The Esopus Creek and Catskill Mountains served as the setting.

The Detectives club and video are a pandemic success story. The program continued to meet largely outdoors following multiple safety procedures.

The 'Snapshots from the Field' video can be watched at https://youtu.be/R5DiHwM_gdk.

Stream Creature Feature: River Otter!


By Eric Johnston

Residents of the Ashokan Watershed likely know that the forested landscape provides habitat for numerous animal species even if we don't see some of them very often. Many of our more elusive furbearers have habits that keep them well hidden from the casual eye. However, the winter months and snow cover offer anyone with warm boots and clothes the chance to observe in detail the hopping, bounding, walking, and waddling tracks of all our native wildlife. A walk outside when there is snow on the ground reveals the hidden activity of animals you may never see otherwise.


By Dmitry Azovtsev

One of these elusive species that may not even be on your mental list as you follow a set of tracks along the water's edge is the River Otter, *Lontra canadensis*. The telltale slides that appear on the snow among the tracks are a sure giveaway that otters are present.

This member of the weasel family can be easily identified by its stout body and tail with short powerful legs, heavy tail, and short glossy fur. Like the more common beaver, the eyes, nose, and ears of the river otter are located on the top of the head so that they can see, smell, and hear while swimming. The fur color is light brown to black with lighter areas on the throat and chest.

Otters are strictly predators and are dependent on streams and wetlands for their survival, as much of their diet consists of fish and other aquatic species like crayfish and amphibians. While they are mostly nocturnal, otters are more active during the daytime in the winter months as they do not hibernate but take advantage of the relative warmer temperatures to forage and play. Yes, otters are a playful species and one can observe their lively nature by examining the tracks they leave behind.

River otter prints and slide into a stream pool at the Ashokan Center in Olivebridge. By Matt Savatgy.

River Otter tracks can form a few different patterns depending on the speed they are traveling, but a tell-tale sign of their prints is both a tail drag and as mentioned earlier, slides. Otters slide on their bellies as a form of locomotion and play. Members of the Watershed Detectives were lucky enough to observe otter tracks at the Ashokan Center this winter and it was a first for many in attendance, instructors included!

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AWSMP UPCOMING EVENTS

Saturday, April 23

Stream Explorers Youth Adventure returns! This one-day conference for grades 3 - 7 features environmental and stream activities on the grounds of the Ashokan Center in Olivebridge, NY. The program runs from 9-4. Registration will begin in March at ashokanstreams.org.

Stream Program Office Open M-F

The AWSMP has resumed regular office hours Monday through Friday from 9am - 4pm. The office is located in the model homes directly across from the Citgo in Shokan, NY. Email or call us at info@ashokanstreams.org or 845-688-3047.

Ashokan Watershed Stream Management Program

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