ASHOKAN WATERSHED STREAM MANAGEMENT PROGRAM

Winter 2016

Esopus Creek NEWS

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Esopus • Birch Creek • Bushnellsville • Fox Hollow • Peck Hollow • Broadstreet Hollow • Woodland Valley • Stony Clove • Beaver Kill • Little Beaver Kill • Bush Kill

IN THIS ISSUE

A Stream Management Plan for the Beaver Kill

The AWSMP is eager to share the results of the 2012 stream assessment of the Beaver Kill in the newly available Beaver Kill Stream Management Plan. The study provided a wealth of information and insight into the many challenges faced by streamside residents, municipalities, and water supply managers in the Beaver Kill watershed. The Stream Management Plan identifies these challenges and provides recommendations for best management practices that aim to mitigate hazards and improve stream stability.

Though the plan breaks up the stream into nine segments called management units (see map on next page), the Beaver Kill can be thought of as three distinct regions summarized here with a few common observations and management recommendations:

UPPER MINK HOLLOW ROAD TO ROUTE 212 BRIDGE (Mgt. Units 6A-9)

Description: The steep boulder and cobble channel is highly confined by valley walls and roadways. As a result, there are many bridges and a high percentage of the streambanks have been hardened (lined with rock) to protect roadways and private property.

Major Concerns: Numerous large hillslope failures are the result of historic and current channel downcutting. Bed and bank erosion sends woody debris and sediment downstream, and impairs water quality.

Recommendations:

» Address stream instability in areas with severe erosion through reach-scale restoration (the AWSMP is planning one project for 2016).

» Explore options for mitigating hazards posed by woody debris along Mink Hollow Road.

» Keep large boulders in the channel bed. It has been a common practice to use stream boulders to armor streambanks, but these boulders are critical for dissipating energy and limiting erosion.

Willow Flats

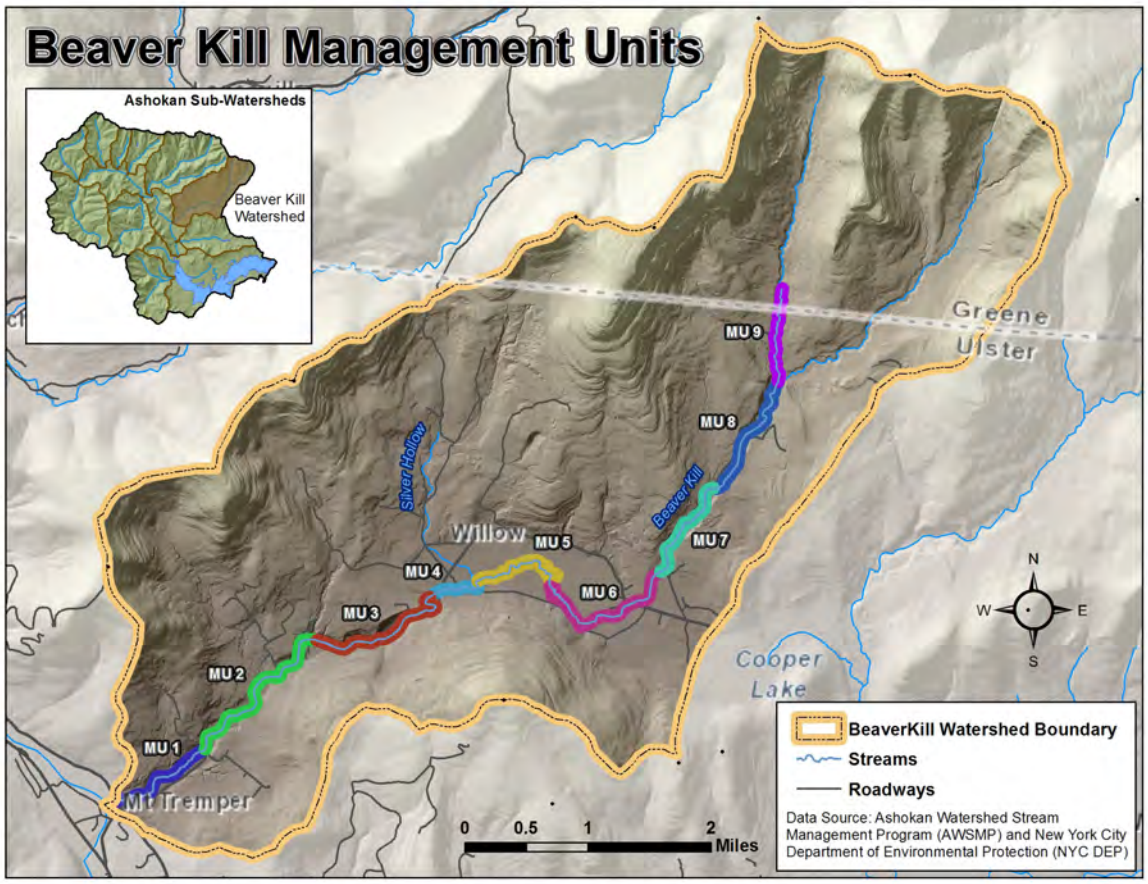
SICKLER ROAD AND WILLOW FLATS BETWEEN ROUTE 212 BRIDGES (Mgt. Units 4-6B)

Description: This section has an extremely flat and broad valley. The channel has a low gradient and a highly sinuous pattern prone to lateral migration and avulsion.

Major Concerns: Sediment aggradation, extreme bank erosion and riparian buffer impairments threaten stream stability and pose hazards for Sickler Road.

Recommendations:

» Maintain a mature buffer of vegetation along the stream and restore vegetation where



Many of the issues identified in the Beaver Kill are the legacy of natural events, as well as historic and current human alteration of the channel and floodplains throughout the watershed.

post-Irene stream work has been done. Vegetation helps to stabilize banks and is critical for preventing rapid lateral migrations in the broad valleys present in these management units.

» Maintain water access to floodplains. This valley setting is a natural sediment sink area and there are many benefits for it to function as such. Much of this area is not heavily developed and room should be maintained for the Beaver Kill to flow onto its floodplains, which effectively store fine and course sediment.

ROUTE 212 BRIDGE TO ESOPUS CREEK CONFLUENCE (Mgt. Units 1-3)

Description: The river valley narrows and the channel gradient steepens. Much of the Beaver Kill is within close proximity to State Route 212 and private drives with a high percentage of streambanks hardened for roadside and property protection.

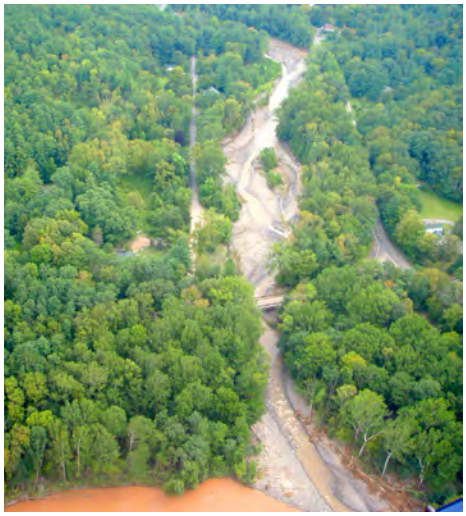
Major Concerns: Hillslope failures and erosion into high abandoned river terraces is prevalent and poses many risks to streamside infrastructure and stream stability.

Recommendations:

» Assess the impact to downstream areas of eroding river terraces. Support the development of a sediment budget for the Beaver Kill.

» Where feasible, allow the active channel corridor to continue widening. This is a natural process following recent channel downcutting that occurred throughout much of Management Units 2, 3 and the upper half of 1. This process allows the channel to rebuild a floodplain and recover a state of stability and equilibrium.

Observing channel response to past and current management practices helps us to understand stream processes, predict possible unintended consequences, and improve stream management strategies. With the detailed reach by reach description provided in the Beaver Kill Stream Management Plan, readers too can explore the Beaver Kill and learn from the observations made during the assessment. The plan includes recommendatios for what you can do, or we can do as a community, to become better stewards of our beautiful Catskill streams. You can find the Beaver Kill Stream Management Plan at: http://ashokanstreams.org/exploring-the-watershed/beaverkill-2/



The Beaver Kill where it enters the Esopus Creek at Mt. Tremper (Management Unit 1).

Featured Riparian Plant: Dogwood

Cornus spp.

Dogwoods are commonly found bordering streams in the Esopus Creek watershed. Several dogwood species are recommended for streamside buffer plantings, including Redosier, Silky, Gray, and Alternate-leaved Dogwoods. Native dogwoods root well under tough conditions, are known to survive the cold winters of upstate New York, offer great wildlife habitat, and are readily available for purchase within the region. All of the native dogwoods can be propagated with cuttings, except for Alternate-leaved Dogwood.

Redosier Dogwood

Cornus sericea

Redosier Dogwood is a deciduous spreading shrub with attractive smooth, red bark throughout winter, when a splash of color is welcome. It has multiple stems and a rounded form. It does well in sun to partial shade in well-drained and seasonally wet soils. The small white flowers and white berries draw butterflies and other pollinators, and are eaten by birds.

Silky Dogwood

Cornus amomum

Silky dogwood is a multi-stemmed shrub, and has reddish purple stems with fine silky hair. The stems are brightest during fall, winter and early spring. Its blue berries ripen to black and are food for wildlife. The Silky Dogwood is one of the most shade tolerant shrubs for moist soil.

Alternate-leaved Dogwood

Cornus alternifolia

A less common dogwood found in moist woodlands or woody wetlands, the Alternate-leaved Dogwood is a deciduous tree (sometimes with a shrub habit) that can grow 25-feet tall. The stems and broad leaves are born on alternate branches, while other dogwood species have opposite leaves. Small cream-colored flowers cluster at the ends of branches in the spring, followed by blue-black fruits in late summer. Also called Pagoda Dogwood, because of its spreading branches. Grouse and wild turkeys eat the fruit and buds.

Sources:

United States Department of Agriculture Natural Resource Conservation Service. Plants Database. Accessed online January 6, 2016: http://plants.usda.gov/java/

Barlow, Virginia. "Alternate-leaved Dogwood, Cornus alternifolia." Northern Woodlands. Summer 2006. Accessed online January 6, 2016: http://northernwoodlands.org/articles/article/alternate_leaved_dogwood_cornus_alternifolia

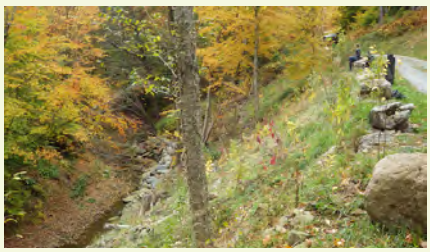
CSBI by the Numbers

The **Catskill Streams Buffer Initiative (CSBI)** assists landowners with managing their streamside areas. The first step is a site visit from CSBI Coordinator Bobby Taylor with the Ulster County Soil & Water Conservation District. Bobby reviews the site with the landowner to learn more about needs and objectives for the streamside area. If the site qualifies for a riparian buffer, the CSBI program will develop a site plan, provide native Catskill plants for free, and install the stream buffer!

Here's what the CSBI program did in 2015:

- Assisted 6 landowners with streamside plantings.
- Re-vegetated 1.3 acres along 2,070 feet of stream.
- Planted 1,081 trees and shrubs!
- Planted 7,500 willow stakes as a source for future harvesting.
- Monitored 29 established buffer sites.
- Made 16 technical assistance visits with landowners.
- Developed 26 custom landowner-specific Riparian Corridor Management Plans.

Interested landowners should call the AWSMP office at (845) 688-3047, Ext. 6.



A Stream Restored

In fall 2015, the Ashokan Watershed Stream Management Program (AWSMP) completed a project to halt bank erosion on the Stony Clove Creek near Lanesville. The channel was restored through a 2,500-foot corridor heavily damaged during Tropical Storm Irene. During T.S. Irene, several homes were lost and sediment accumulated in the center of the channel, pushing stream flows toward the banks.

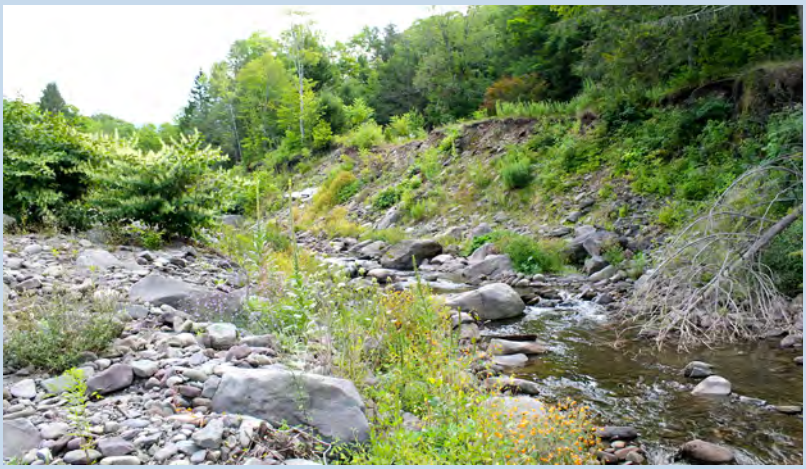
Banks continued to retreat in front of three remaining homes and several large hillslopes. The rapidly slumping hillslopes contributed significant amounts of fine sediment to the stream, including clays, which travel miles downstream.

The restoration returned flows to just one channel running through the corridor. The channel was engineered to pass both low and high stream flows and the sediment carried by those flows, without significantly eroding.

Kingston Equipment Rental, Inc. (Baker Brothers Excavating) out of West Hurley built the project. The project was designed by consulting firm Milone and MacBroom, Inc. The Ulster County Soil and Water Conservation District (SWCD) provided overall project management.

Restoration of the stream channel cost approximately $1.5 million. The stream restoration was funded by the NYC Department of Environmental Protection and the Natural Resources Conservation Service Emergency Watershed Protection Program. The Town of Hunter sponsored the project.

In 2016, the Ulster County SWCD will work with landowners to tailor plantings to their properties and revegetate areas scoured during T.S. Irene. They will also continue monitoring the site.



Stream restoration site before construction

Left: A Baker Brothers Excavating operator precisely regrades a failing hillslope, guided by site foreman Mike VanDeBogart.

Above: Vernon Bevan (left) was the on-site representative for engineering firm Milone and MacBroom, Inc. Adam Doan (right) was the project manager for the Ulster County Soil and Water Conservation District.

Site after construction

Imbrication: Learning Stream Science in Rochester Hollow

A participant of the Rochester Hollow stream walk points to a pile of rocks along the stream edge and asks: "Why do the rocks do that? How do they get that way?" The rocks in question have created an interesting feature in the stream. They are sitting to the right side of the steam, and are the size of dinner platters. The rocks are stacked 4 deep, and sitting on an angle, so that they overlap each other like tile on a roof. One rock protects the next. The more we observe rocks in the stream, the more this overlapping pattern becomes apparent, and something tells us there's a story as to why!

"That's a great question, and keen observation," says Allison Lent, Stream Assessment Coordinator for the Ashokan Watershed Stream Management Program. She explains, "The rock layout and orientation that you see is called "imbrication."

The bedrock geology of the Catskills results in plated, saucer-like rocks (rocks that are thin on one axis). As natural stream flows recede after a flood, and things stop moving, the rocks end up layered. Once imbricated, they take more force to mobilize.

Imbrication makes the streambed more stable and less easy to move. But once mobilized, their disk-like shape provides aerodynamic lift and they remain mobile more easily than rounder rocks.

FEMA's Community Rating System

Changes to the National Flood Insurance Program (NFIP) in 2012 and 2014 included significant increases in premiums for flood insurance policy holders. As a result, policy holders are seeking ways to reduce their premiums. Towns can help by entering into the Community Rating System (CRS).

CRS is a program that reduces flood insurance premiums for policy holders, if a participating community (in this case a Town) goes above and beyond the minimum standards set by the NFIP.

The CRS program encourages higher standards to ensure that future development is done in a safe, environmentally sound way, while also lowering insurance premiums for those with flood insurance policies.

AWSMP hired the consulting firm Tetra Tech to give a one-day workshop for community leaders to learn more about CRS. Topics included how to enter into CRS, how to maximize CRS points, and how to maintain standing in CRS.

The training was delivered by Tetra Tech Senior Planner Rob Flaner, a Certified Floodplain Manager who worked for FEMA to manage CRS communities including Roseville, CA, the only CRS community with a rating of 1 (the highest rating available in the CRS program).

Here are a few key points Rob delivered for how to achieve CRS scores that reduce premiums. Communities receive points if they:

- Require any new development or substantial improvement in the regulated floodplain (also referred to as the "Special Flood Hazard Area") to file an Elevation Certificate (EC) with the community. Communities should not accept incomplete or inaccurate ECs and are responsible for maintaining the ECs on file.
- Design and conduct outreach projects (mailings, webpages, posters, etc.) for residents about topics such as flood preparedness, the natural functions of floodplains, the NFIP, etc.
- Document the preservation of open space (vacant land that will remain as such in perpetuity) within the regulated floodplain.
- Adopt higher regulatory standards for building within the Special Flood Hazard Area, such as establishing a higher "freeboard" requirement or creating a local definition for "cumulative substantial damage and/or improvement."
- Communities in New York State receive some points automatically for meeting state standards that exceed national requirements for freeboard and dam safety.

Code Enforcement Officers John Ingram (left) and Dom Covello (right) are working to help the Town of Olive join the Community Rating System.

Rainbow Trout Populations Rebound

Rainbow Trout caught in the upper Esopus Creek, 2015. Photo by E. Ostapczuk.

Winter has arrived and the trout season on the Esopus has ended. Time to tell the season's stories, and work up the field data. Starting with a story, here's Ed Ostapczuk's account of the last good strike on the last day of the season, fishing the Esopus Creek below the Portal:

"In the dark shadows of the far bank I experienced a ferocious, violent strike. Though I couldn't see anything in the shadows, I drove the barb of that streamer home several times. This was a good fish, one that I didn't want to lose. In cold water it took a bit, but eventually I net a 17" brown trout. Upon releasing the fish, my 2015 Esopus Creek trout season came to an end at 1 PM this afternoon."

The big news on the Esopus this year is that wild Rainbow Trout have made a great comeback. Ed reports,

"Back in late April I caught a bow a quarter-inch short of 21" in a trib; my second largest rainbow ever since I started fishing the Esopus Creek watershed in 1970. And when I fished for bows, I caught a good number this year, on some outings far more than browns."

As for the data, the U.S. Geological Survey, in cooperation with the Ashokan Watershed Stream Management Program and the New York City Department of Environmental Protection, has surveyed fish communities at 7-9 sites annually on the upper Esopus Creek from 2009-15.

In 2015, the study focused on the status of Rainbow Trout. Rainbow Trout have thrived in the upper Esopus Creek since their introduction in the 1880s. According to angler accounts, however, Rainbow Trout populations throughout the Ashokan Basin declined precipitously in recent years (in prep. George and Baldigo, 2015).

Data collected by the USGS at sites on the upper Esopus Creek and its tributaries show that the average density of Rainbow Trout populations declined from 114 fish/0.1 ha in 2009 to 17 fish/0.1 ha in 2013 (George and others, 2015), supporting angler observations that Rainbow Trout populations were declining.

This is concerning because wild Rainbow Trout fisheries are rare in New York State and the fishery in the upper Esopus Creek and Ashokan Reservoir has historically been regarded as exceptional by sportsmen and natural resource managers.

The cause of the decline is unknown, but DEC Region 3 Fisheries Manager Mike Flaherty wonders if storm-related turbidity in the Ashokan Reservoir contributed to a reduction in spawning aged trout. With lessening turbidity, better habitat condi-

Photo by E. Ostapczuk

tions in the Reservoir may favor Rainbow Trout recovery.

Or, recent declines could just be natural variation in the fish population. Wild Rainbow Trout populations are not stocked in the Esopus Creek and "are on their own" when it comes to reproducing themselves.

The good news is USGS scientists found relatively large numbers of young-of-the-year Rainbow Trout at most sites in 2015. And there were more Rainbows of all ages relative to Brown Trout at the surveyed sites when compared to the previous two years (in prep. George and Baldigo, 2015).

Overall, anglers report it was a good year for trout fishing in the Esopus. How good may depend on the length of your memory and fishing experience. Long-term fly fisherman Tony Cocozza tags 2015 as "a good year, not a great year."

AWSMP stakeholder Mark Loete, whose angling guide business is booming with out of town visitors, can confirm the Esopus is at least world-famous for its wild Rainbow fishery.

For those who remember 2008-2009, some of the best years for Rainbow Trout, this year was encouraging. To quote Ed Ostapczuk one more time, "I'm already looking forward to the Esopus Creek in 2016 and have high hopes for the Rainbows."

References:

George, S.D., Baldigo, B.P., Smith, A.J., and Robinson, G., 2015, Effects of extreme floods on trout populations and fish communities in a Catskill Mountain river: Freshwater Biology, v. 60, no. 12, p. 2511-2522.

George, S.D. and B.P. Baldigo, in prep., Long-term trends in naturalized Rainbow Trout populations in the upper Esopus Creek.

AWSMP Comings and Goings

Chris Tran is the new NYC Department of Environmental Protection (DEP) Project Manager for the AWSMP.

Chris joined the AWSMP in November. Previously, Chris was the Catskill Streams Buffer Initiative Coordinator for the NYC Watershed.

Chris holds a Master's of Science in Conservation Biology and Freshwater Ecology from the University at Albany. He lives in Rhinebeck with his wife Eileen and their 4-year old son Jackson, 2 dogs, and various chickens.

Chris says his favorite part of being a stream manager is working to restore streams back to their natural form and function, so that future generations will have an opportunity to enjoy these resources. Chris likes to bow hunt and fish. He enjoys fishing the Esopus and plans to introduce his son to fly fishing on the Esopus Creek.

Departing AWSMP Project Manager **Danyelle Davis**, has taken the position of Stream Studies Coordinator with DEP's Stream Management Program. Danyelle will continue participating in AWSMP working groups that deal with research, assessment and monitoring, and will be overseeing a 10-year Stony Clove and Esopus Creek turbidity study.

Danyelle started working with the AWSMP in 2003. She has walked and assessed at least 30 miles of stream over the last 12 years and knows the Ashokan Watershed well. Danyelle will continue assisting the program with studies and teaching in the watershed.

AWSMP is pleased to introduce our new administrative assistant, **Jamie Joy**, who joined the program in July 2015. Jamie is a Kingston, NY native with over 15 years of secretarial and administrative experience. She is enjoying learning about the New York City Watershed and all of the programs, opportunities and challenges associated with it.

"I never realized how large the watershed is and how much work goes into maintaining it," she said, "After working here for the past six months I've grown to appreciate all the hard work that all of the various stakeholder groups put into making the watershed a viable drinking water supply for New York City water users, as well as a great place to live for upstate residents." In her free time, Jamie enjoys hiking, camping, and volunteering for a variety of local charitable organizations.

AWSMP UPCOMING EVENTS

Thursday, October 27 - Friday, October 28
Catskill Environmental Research & Monitoring Conference
Belleayre Ski Center, Highmount, NY

The CERM conference is a forum for researchers, students, resource managers and other stakeholders to review current research and discuss plans for future environmental research and monitoring in the Catskill Mountain region. For more information: **http://ashokanstreams.org/research-conference/**

Ashokan Watershed Stream Management Program

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Soil and Water Conservation District

NYC Environmental Protection

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