

A photograph of a shallow stream with several large, mossy rocks. The water is clear, reflecting the surrounding greenery and sky. Fallen leaves are scattered on the rocks and in the water. The overall scene is peaceful and natural.

Forests & Water Quality Teddie Stark



GREEN VALLEYS
WATERSHED
ASSOCIATION

Forests and Water Quality

Teddi R. Stark

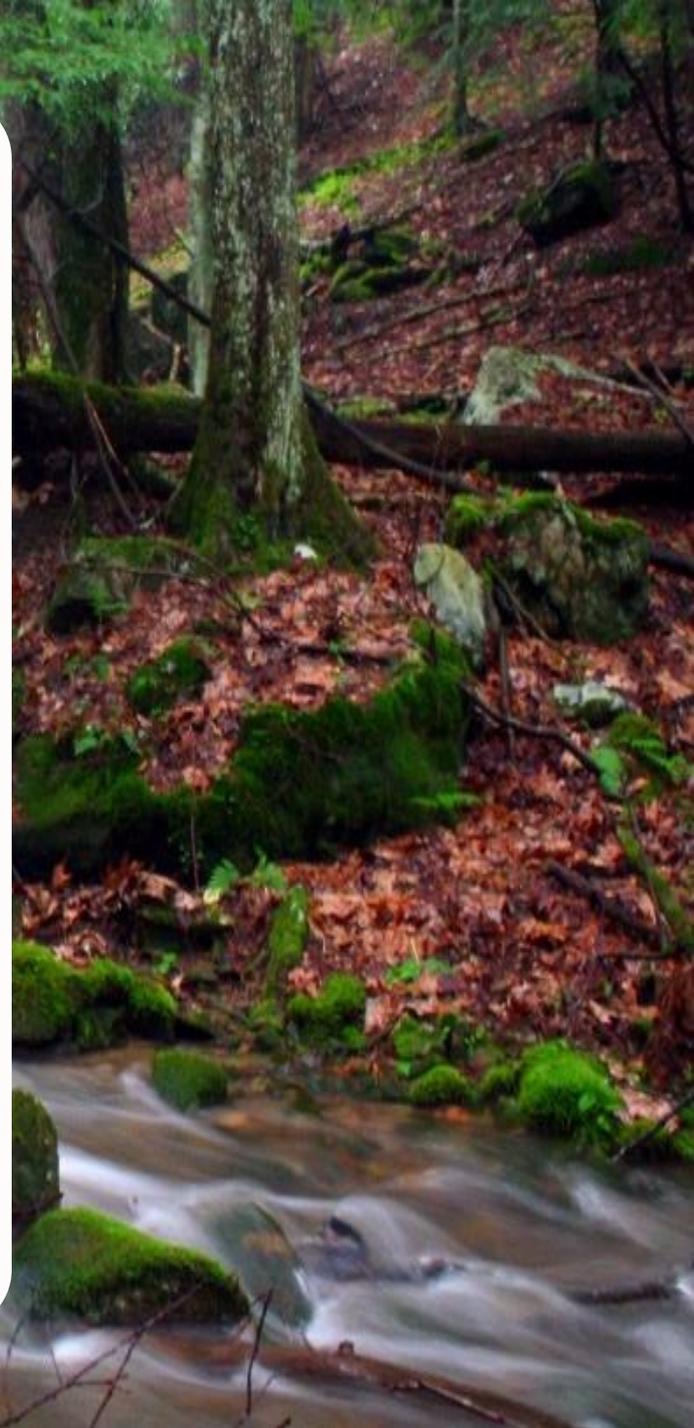
**Riparian Forest Buffer
Coordinator
DCNR Bureau of Forestry**

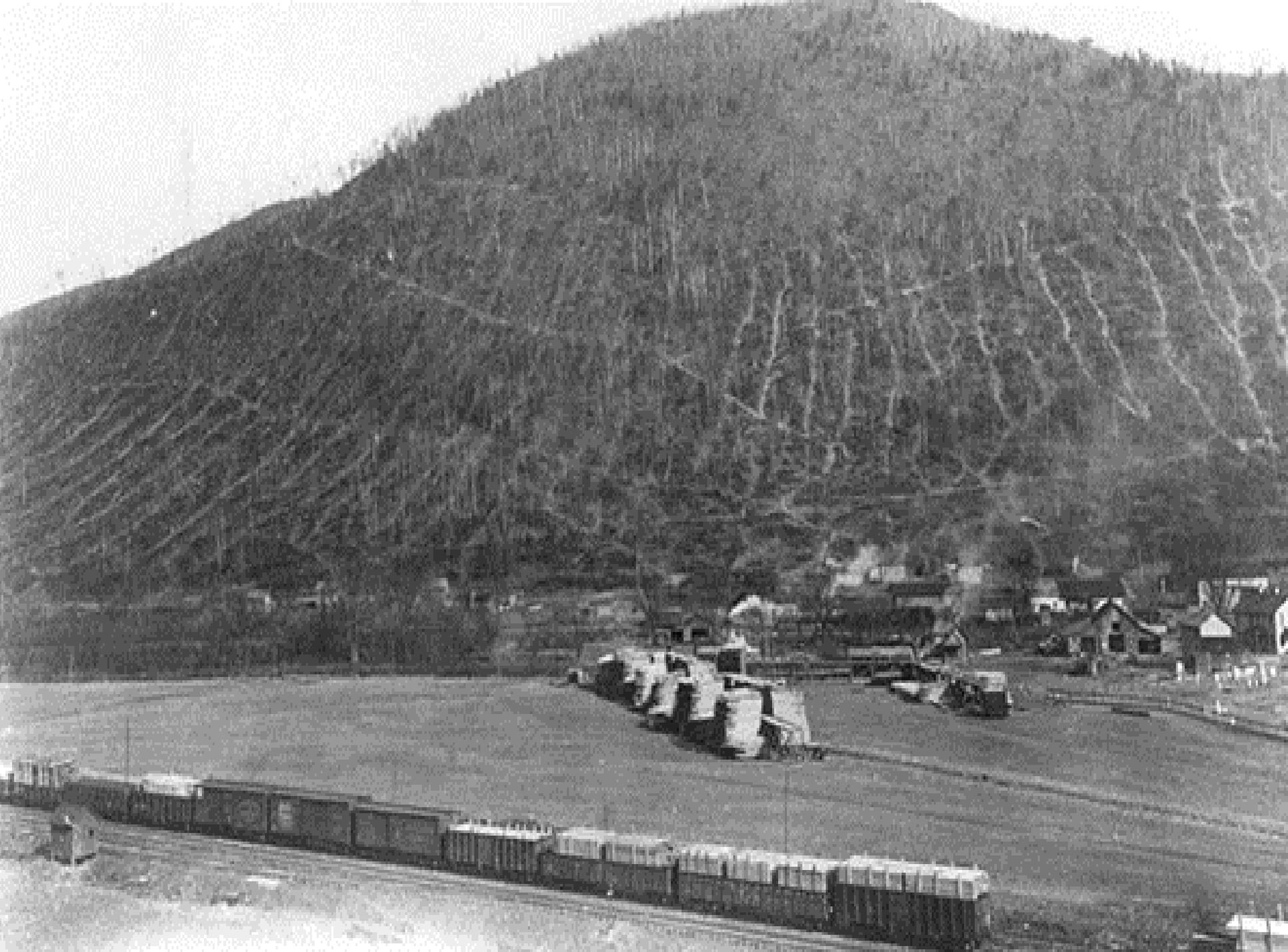


Streams Need Forests

Pennsylvania, or Penn's Woods, was once largely forested.

Our streams and their ecosystems evolved in a forested environment.



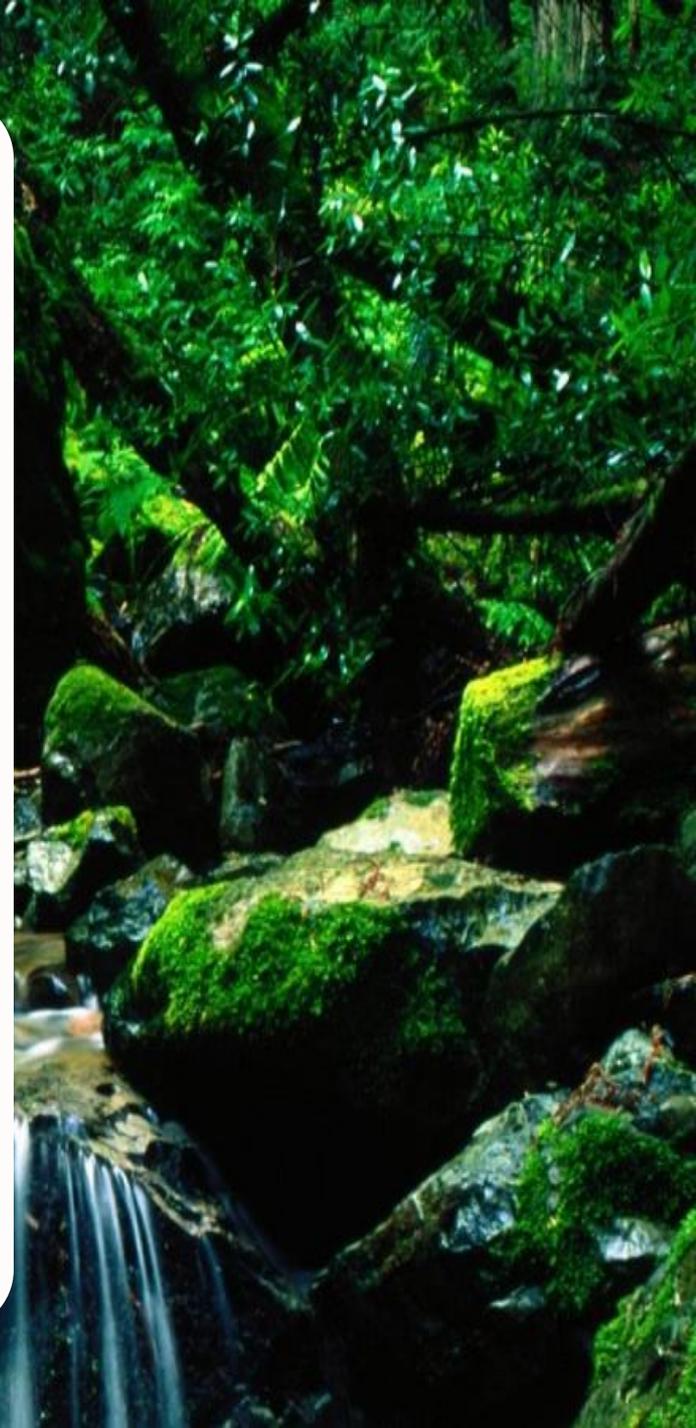


Reduced Erosion = Less Soil in Our Water

Tree canopy helps intercept some rainfall/precipitation, keeping it from impacting the ground and disturbing the soil.

Soil is covered by leaf litter, and further protected.

Erosion in forested ecosystems occurs only at a natural pace, is not artificially accelerated.





Forests Recharge Groundwater

Rain that falls to the forest floor percolates down through forest soil, loose from absence of impaction by human equipment and full of pores from roots.

Some precipitation is taken up by roots, but some also recharges the groundwater supplies.



More Forest = Less Flooding

Under certain conditions (very moist soil, dry air), just one large, leafy tree can take up as much as one ton (~240 gallons) of water from the soil *every day*.

Imagine the difference in stream conditions after a heavy rainfall in an urbanized area void of many trees, vs. an old growth forest with many large, leafy trees under the right conditions!



Forests Intercept Pollutants

Overland runoff from rainfall often carries pollutants to streams (fertilizers, etc.) which are harmful to water quality.

Forested areas help slow runoff, letting pollutants drop out of the water, and filtering pollutants before runoff reaches water bodies or aquifers.







Stream Ecosystems Depend on Forests

Entire ecosystems thrive between the banks of a healthy stream- from algae and microbes, to insects and fish!

Macroinvertebrates require native leaf litter and low levels of sedimentation/pollution.

Shade is important- many stream creatures can't survive water temps much over 70°F.





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But What Can We
Do?

Retain and Reforest
Critical Areas:

**Riparian Forest
Buffers**

What's a Riparian Forest Buffer?!

Riparian: "relating to or situated on the banks of a river."

Riparian Forest Buffers are the trees and shrubs growing or planted next to a body of water.



Photo Credit: Chesapeake Bay Journal



Benefits of Reforesting Riparian Areas

-Cleaning up polluted waters

-Streambank stabilization

-Improved fish habitat

Terrestrial wildlife habitat/corridor connection

Reduced flooding/flood damage

Increased recreational opportunities (fishing, hunting, swimming, etc.)

Many more!

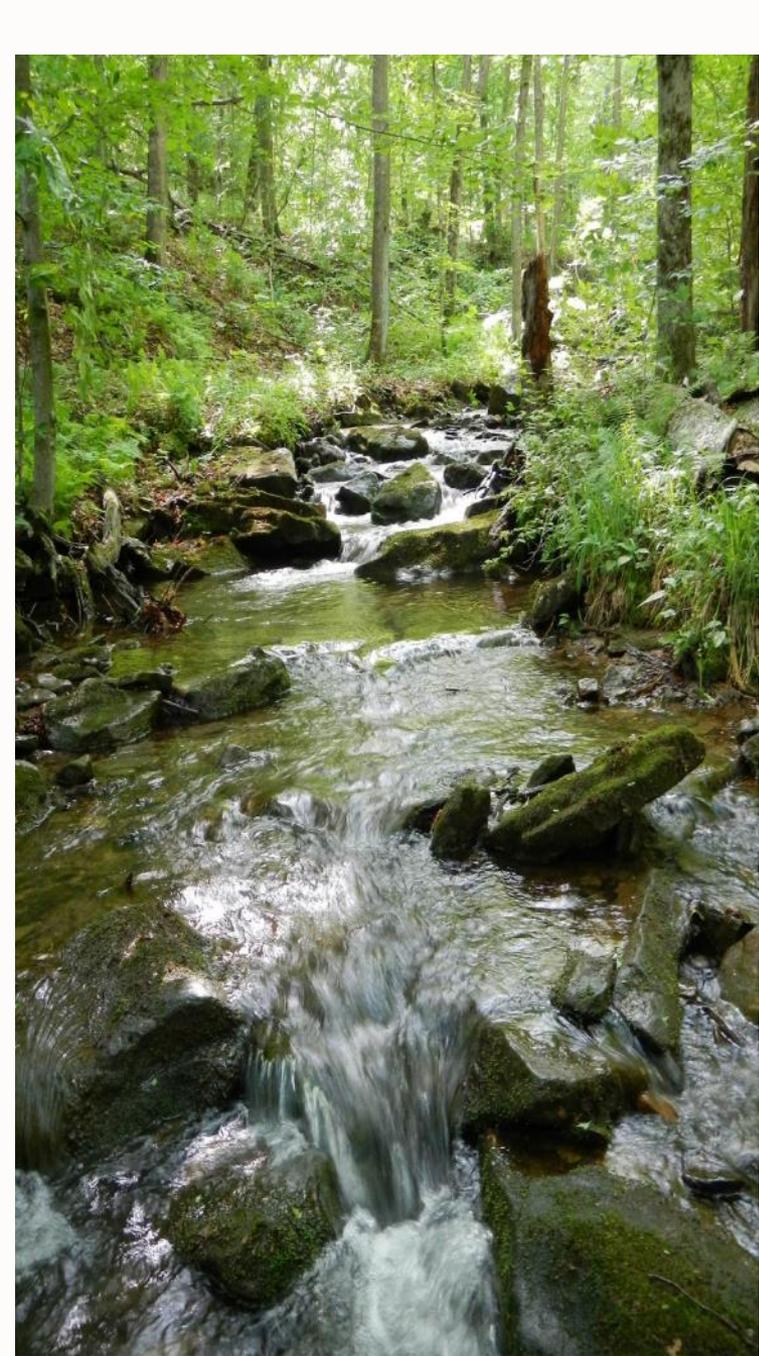
Reaping the Benefits of a Forest with a Buffer

While any trees buffering a stream are better than no trees at all, to get the full benefit of a functioning stream ecosystem, riparian buffers should be 100ft. Wide on each side of the streambank.

Many grant programs require at least a buffer width of 35 ft.

Some benefit is still achieved from a minimum buffer width of 10-15ft.





Forests keep pollution out of the water, AND help remove existing nutrients!

-Healthy streams with healthy ecosystems (macroinvertebrate and fish populations) process excess nutrients that slip by buffers and manage to make it into the stream.

-This in-stream processing helps keep minor issues from compounding and spiraling out of control.

Moving Forward: Planting Riparian Forest Buffers

For Our Future

Native tree and shrub species should be selected based on site conditions.

Work with your county's DCNR Service Forester or other local partners to plan and plant your buffer!

Federal and state funding is available for conservation groups and landowners.

Don't Forget- buffer maintenance and stewardship!

Hurdles to Overcome

- Not always seen as “aesthetically pleasing”
- Landowners don’t always have funding to plant and care for buffers that do not benefit their bottom line.
- Farmers look at acreage of buffer on their properties as “lost ground”



Overcoming Obstacles

Grant funding is available- partner with local conservation organizations to find the best financial help for your project.

Help others understand that buffers a natural and beautiful, and a sign of a good land manager- NOT unmanaged overgrowth.

Consider planting alternative crops in riparian forest buffers- while acreage may be lost to tradition corn and soybeans, fruits, nuts, herbs, or other “non-traditional” crops could be grown for personal use or potentially for income.