

# Bay Journal



## States lagging badly in planting streamside trees

### Funding glitches, farmers' resistance hinder 'king' of conservation practices

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Timothy B. Wheeler | April 02, 2018



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For all of the recent good news about the Chesapeake Bay, including declines in nutrient pollution and the resurgence of underwater grasses, there's one trend that's far from positive. For the last decade or so, the federal-state restoration effort has missed its targets – badly and consistently – for planting new forests along streams and rivers throughout the Bay watershed.

Why does that matter, when the Chesapeake seems to be recovering? Because without the pollution-cleansing power of more streamside forests, the Bay cleanup could falter, short of its goal of all but eliminating oxygen-starved dead zones where fish, crabs and oysters struggle to breathe. Many of the watershed's degraded streams and rivers won't regain their



*John Stanton plants river birches on a farm in Albemarle County, VA, along a tributary to the Hardware River, which drains to the James River. The tree planting in early March was organized by the James River Association. (Amber Ellis / James River Association)*

health, either.

“We are not getting new buffers in the ground at anything like the pace that is necessary,” acknowledged Rebecca Hanmer, chair of the Chesapeake Bay Program’s forestry workgroup. She’s a former director of the U.S. Environmental Protection Agency’s Bay Program Office, now retired.

To complete the marathon cleanup begun 35 years ago, the Bay watershed states have all pledged to greatly increase the amount of streamside forests, also known as riparian forest buffers, to capture excess nutrients and sediment that are still impairing the estuary.

In the most recent Bay Watershed Agreement signed in 2014, the six watershed states and the federal government vowed to “restore 900 miles per year of riparian forest buffer and conserve existing buffers.”

They haven’t even come close. In 2015, the six states together managed just 64 miles of new buffers. There was a tenfold increase in 2016, but only because Pennsylvania added a bunch of previously planted but uncounted buffers that were turned up by a Penn State survey of farms. Preliminary figures for 2017 are around 70 riparian miles.

The reasons for the failure are complex, and vary by state and even by year, those involved say. Here are the three big factors:

- Farmers are reluctant to take cropland out of cultivation, given fluctuating commodity prices.
- Some farmers dislike the red tape, complications and long-term commitments involved in getting government payments for taking land out of production and planting buffers.
- Federal and state funding to pay farmers for forest buffers has fluctuated along with the staffing to help farmers navigate the process.

Forests are the vital organs of the Bay watershed. Besides providing food and shelter to birds and other wildlife, they act as natural sponges, soaking up rainfall, trapping polluted runoff and stabilizing soil that would otherwise wash into waterways.

When the English settler John Smith led an exploration of the Bay in the early 1600s, the Chesapeake watershed was about 95 percent forested, researchers estimate. Much of what ails the Bay today can be tracked to the removal of that forest to make way for farming and development.

### Buffers among the best BMPs

But where they still exist, streamside forests can reduce the amount of nutrient pollution entering waterways from 30–90 percent, according to the Bay Program. And more than half of the region's native species, including wood ducks, bald eagles, turtles and amphibians, depend on such wooded areas for food, shelter and access to the water.

Of the many different “best management practices,” or BMPs, landowners could adopt to improve water quality in the Bay watershed, planting and maintaining forested stream buffers rank at or near the top because of the unparalleled range of ecological benefits they provide. In addition to reducing pollution, they dramatically improve stream health by stabilizing banks, shading streams and cooling the water so it's more habitable for fish and other creatures. Tree roots, branches and leaves falling in streams also offer habitat, as well as food for the base of the aquatic food chain.

“The riparian forest buffer is the king of BMPs,” said Ann Swanson, executive director of the Chesapeake Bay Commission, a legislative advisory body.

The Chesapeake Executive Council, which guides the restoration effort, first called for an effort to enhance and restore riparian buffers in 1994, and set its first regional goal in 1996: to plant 2,010 miles by 2010. The federal Conservation Reserve Enhancement Program, which has become the workhorse of the buffer effort, was launched in Maryland the next year and spread to the rest of the Bay states shortly afterward.

Administered by the Farm Service Agency of the U.S. Department of Agriculture, CREP gives farmers an annual payment for voluntarily removing environmentally sensitive land from production and putting in grass, trees or other vegetation. The amount varies by location, soil type and tree species planted; in Maryland, payments range from a low of \$80 per acre to \$400, with an average payment of \$250.

Farmers also get a bonus payment of \$100 an acre when they sign a 10– or 15-year

contract to put in the buffer. They get mostly if not fully reimbursed for the cost of the plantings and receive an additional payment once the seedlings have been in the ground and survived a couple years.

Early on, the incentives offered by CREP spurred a flood of signups to plant new buffers, which reached a peak of about 1,100 miles of new riparian buffers across the watershed between 2002 and 2003. After reaching the initial goal of 2,010 miles, federal and state agencies then called for enough buffers to cover 70 percent of the watershed's riparian areas.

"We had big eyes," recalled Anne Hairston-Strang, associate director of the Maryland Forest Service. But the campaign never achieved the 2003 level of plantings again.

"In the beginning, we made extraordinary progress in protecting riparian buffers," Swanson said, "and all of the states adopted initiatives that tried to protect and enhance those buffers. But over time, the interest level has waned."

CREP changed its incentive structure over time and suffered an interruption when Congress dragged its feet in reauthorizing the federal Farm Bill. That caused extensive delays in 2013 and 2014 in getting farmers enrolled and trees planted, according to a 2015 Bay Program management strategy for forested buffers.

"There's just been hiccups in these programs," said Craig Highfield, director of the Chesapeake forests program at the nonprofit Alliance for the Chesapeake Bay.

State funding has gone hot and cold, too: CREP requires a partial match from state and other sources, and some states haven't provided it consistently. Virginia temporarily ran out of money to match federal CREP funds, Highfield said. And last year, Maryland didn't put any of its agricultural cost-share funds toward riparian buffers, a lapse that has since been corrected.

Sally Claggett, the U.S. Forest Service liaison to the Bay Program who's tracking the buffer effort, called the glitches "frustrating... It really takes so many things to go well. It's almost like a marriage, there's so many people involved, so many cross-cultural relationships. It's easy for things to break down, and when I'm looking across six states, different things break

down.”

Virginia focused for a while on a campaign to get farmers to fence their livestock out of streams, which would reduce erosion and pollution from animals wading in the water. The state offered an unusually generous 100-percent reimbursement for those projects but didn’t tie them to planting trees along the fenced-off streams.

“Fencing the stream off is great, but if you put trees in there, you’ve got eight times more potential to clean the water,” said Bobby Whitescarver, a farmer in Swoope, VA, who’s an ardent advocate for both fencing streams and planting forested buffers.

But combining the two, some say, would have been too hard to pitch to farmers.

Some say the drop in CREP signups after 2003 has less to do with funding and instead is related to more deep-seated problems – that the “low-hanging fruit” of motivated, conservation-minded farmers had already enrolled. Others shunned the program because higher commodity prices meant they could earn more by raising crops up to the stream’s edge than they could get in payments from CREP. And some farmers chafed at the paperwork to sign up, as well as the requirement that they maintain the buffer.

“One of the things that farmers don’t like, particularly, is red tape,” Whitescarver said.

Even with those hurdles, the relatively low cost of forest buffers and their multiple benefits have kept states looking to maximize their spread.

Bay watershed states leaned heavily on forested buffers in the plans they submitted several years ago for complying with the EPA’s Bay “pollution diet,” formally known as the Total Maximum Daily Load. In fact, because of buffers’ nutrient- and sediment-removing capacity, they collectively projected planting even more than the 2014 Watershed Agreement called for – 295,000



acres by 2025. At 12 acres per riparian mile, that comes out to about 1,100 miles of riparian forest annually.

### Resistance to streamside forests

While Pennsylvania and Virginia both pledged to make big gains in forested buffers to meet their TMDL obligations, Maryland promised a modest increase. Hairston-Strang of the state forest service said that's because Maryland farmers were canvassed and expressed little interest in planting trees in their fields, even if mostly reimbursed.

Resistance to streamside forests is particularly strong on the Eastern Shore, where many have been willing to install grassy buffers but not trees along streams and drainage ditches. Research has indicated streamside forests soak up two to eight times more nutrients in runoff than do grassy strips along waterways.

Hairston-Strang said she understands why Shore farmers don't embrace forested buffers: The trees interfere with the cleaning and maintenance of ditches that were created to drain their low-lying fields.

"How do you do something like ditch maintenance when you have trees and limbs [to work around]?" she asked. "It makes it harder."



*Water fills one of multiple microditches draining a cornfield in Queen Anne's County, MD. Grooves cut in fields channel water to larger, deeper ditches that empty into streams. Such ditching is commonly used by farmers to drain shallow wetlands that cover much of the Delmarva Peninsula. Without the ditching, the field would not be dry enough to cultivate. But ditches can channel nutrient- and sediment-laden water through or past grassy and forested buffers, undermining their ability to protect stream water quality. (Timothy B. Wheeler)*

Even as states ponder how to increase buffer acreage, the initiative faces new challenges — the potential loss of existing buffers, and questions about their effectiveness.

CREP contracts signed 10 or 15 years ago are expiring, and only about half are being renewed, according to the Bay Program. In fiscal year 2017, preliminary figures indicate that landowners signed contracts for about 850 acres of land. But the federal Farm Service Agency, which handles the CREP contracts, reports that contracts covering more than four times as much land — nearly 3,700 acres — were left to expire. Much of that land may remain in forest, in some cases preserved with conservation easements. But the scramble is on to re-enroll eligible buffers and prevent losing what's been planted.

### Buffers require maintenance

It's also been a struggle to see that buffers survive. A study led by the Maryland Department of Natural Resources of about three dozen buffers found approximately 50 percent of the seedlings planted died after five years because of drought, grass overgrowth and lack of maintenance. Establishing and maintaining buffers for 10–15 years has proven to be more difficult and expensive than once thought, and it has hindered participation in CREP because the burden has fallen largely on farmers. CREP helps Pennsylvania farmers pay for maintenance, but other Bay states do not.

Meanwhile, a survey led by Penn State and the USDA's Agricultural Research Service found that some forested buffers aren't doing as good a job of capturing nutrients and sediment as expected. Researchers looked at 149 buffer sites across the watershed and found that the effectiveness of some is undermined by the channelization of water draining the fields, so it bypasses the forested strip or conveys water to the stream too quickly for much filtering to take place.

On Maryland's Eastern Shore, the issue is manifest. In the Tuckahoe Creek watershed, much of the farmland consists of former wetlands that are drained through an extensive network of ditches to make the land dry enough to raise crops. On one field, the research team found the streamside forest removing only about half as much sediment as it could have, and half to two-thirds of the nutrients possible if the buffer had not been compromised.

"The farmer needs to get this land drained for production, and they're going to do what they

need to do to get the water moving off the land,” said Greg McCarty, a research scientist with the Agricultural Research Service in Beltsville, MD. But, he added, “If you’ve got concentrated flow through a buffer, then water has very little interaction with the buffer.”

As work continues to maximize the benefits of forested buffers, the region still faces an ongoing challenge to increase their spread. Details may be included in the states’ new Watershed Implementation Plans, due by the end of 2018, which lay out the steps for reaching 2025 pollution reduction goals.

“So, now,” said the Bay Commission’s Swanson, “we’re really at a crossroads. Can we fix the disincentives to once again put us on a path to more forest buffers, or do we opt for another best management practice?”



*Greg McCarty, a research scientist with the USDA Agricultural Research Service, stands by a grassy buffer beside a farm field drainage ditch near Sudlersville, MD, holding a topographic map of the field. (Dave Harp)*

Recently, there’s evidence that the 70 percent buffer coverage goal set years ago was too low – high-resolution, land use imaging has shown that as much as 69 percent of the Bay watershed already has streamside forests. Those involved in the effort say the goal was more aspirational than real, and it’s clear that more needs to be done. The latest land cover analysis indicates there are 1.4 million acres of riparian turf, pasture and cropland lacking buffers across the watershed.

So, state agencies are tweaking their buffer initiatives. In Pennsylvania, state officials are looking to retool and ramp up their efforts. The state has led the watershed in new buffer creation, but it also has the most ambitious goal – 95,000 acres by 2025.

To overcome farmers’ objections to federal red tape or to taking land out of production, the state Department of Conservation and Natural Resources is funding “multifunctional



buffers,” planted with trees and shrubs that can generate income by producing nuts, berries, willows and energy crops. In early March, state officials announced they were awarding \$1.1 million to the first eight recipients under the new approach.

“Our ambitions go beyond the Chesapeake Bay watershed and the TMDL,” said DCNR Secretary Cindy Adams Dunn. “We would like to establish this as a normal landscape feature in Pennsylvania.”

### Expanding outreach

Meanwhile, states are modestly increasing staff, often with the help of existing federal funds, to expand outreach to farmers, target environmentally important areas and help with buffer maintenance. Federal agencies also are tinkering with the incentives and options in CREP and other programs to provide more incentives and flexibility for farmers.

Nonprofit groups are stepping up their efforts as well. The James River Association, for instance, has organized a “tree-athlon,” teaming up with a pair of soil and water conservation districts and enlisting volunteers to plant 3,000 native trees and seedlings this spring on eight farms in Amherst, Nelson and Albemarle counties.

The Alliance for the Chesapeake Bay, in collaboration with a host of public and private partners, aims to entice more farmers by offering vouchers to pay for other conservation practices. For every acre of riparian forest planted through federal or state cost-share programs, the farmer gets \$3,000 to \$4,000 toward practices such as buffer maintenance and barnyard runoff controls. So far, 140 acres of forest buffers have been planted in Maryland, and the program recently expanded to Augusta County, VA.

Despite such moves, it’s not clear that enough is being done to plant 900 miles of buffers this year or the next, much less the 1,100 miles annually the states pledged to comply with the Bay TMDL.

“It’s not like there’s just nothing happening, but it’s not happening fast enough,” said Bill Chain, Pennsylvania agricultural program manager for the Chesapeake Bay Foundation. “We need to put in some accelerators.”

One possible accelerator may come in April, when the Bay Foundation is expected to

announce a broad-based campaign aimed at enlisting state and local governments, businesses and individuals in an effort to plant 10 million trees by 2025 across Pennsylvania. If all of them are planted on streamsides, that could create 4,000 miles of riparian buffer — half of what the state has pledged to do under the Bay TMDL.

All efforts to date rely heavily on federal funding, particularly CREP. But under the Farm Bill, there's a nationwide cap on how many acres CREP can pay for, and it's nearly been reached. As Congress works on reauthorizing the Farm Bill later this year, state officials and others have called for CREP to be expanded, streamlined and made more flexible.

Hanmer, chair of the Bay Program's forestry workgroup, said she and other buffer advocates plan in May to brief policy makers on the challenges facing an effort they consider critical to completing the restoration of the Chesapeake.

"We're a long way from where we want to be," said Ben Alexandro, water policy advocate for the Maryland League of Conservation Voters. "We need to kick it up a notch or two."



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### About Timothy B. Wheeler

Timothy B. Wheeler is associate editor and senior writer for the Bay Journal. He has more than two decades of experience covering the environment for The Baltimore Sun and other media outlets. [Send Tim an e-mail](#).

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## Comments

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Shannon Moore on April 02, 2018:

Thank you for writing on this topic. Monitoring that we have conducted in Frederick County shows a strong correlation between biological health in streams and percent tree canopy cover in the watershed. DNR is also processing a large dataset that shows a recovery of stream health from maturing tree plantings. You can ask Anne Hairston-Strang more about this. That is the good news. The bad news for us locally is that our county is losing hundreds of acres of trees per year due to development, invasive insects, climate change, etc. We recently tightened up our Forest Resource Ordinance, and created a new program called Creek ReLeaf (<https://www.frederickcountymd.gov/reforest>) that will plant 185 acres of trees this year. We partnered with our local DNR forest service to create the Backyard Buffers program, which is now statewide. We also are partnering with local organizations like StreamLink, that plants riparian forest buffers, organizes community plantings, and conducts maintenance. We updated our Green Infrastructure maps (thanks to Bill Jenkins' office at EPA Region III and the DNR Forest Service working with our office) for our new Livable Frederick comprehensive plan update, and are working to improve local conservation priorities. There is a lot more work to be done but we have made it a priority here at the County Executive level. It's good to see focus on the issue. The article was very informative and well-researched.

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Bill Matuszeski on April 02, 2018:

I have often wondered why more effort is not undertaken in the Chesapeake buffer programs to plant crop trees. This article indicates that some in Pennsylvania are beginning to look at this. I am working in Honduras on sustainable forestry and agriculture in mountain villages. The buffer issues there are to protect streams and to buffer from high mountain areas that have been previously cleared, in part by cutting firewood for stoves. In addition to helping build wood conserving stoves, a big part of the effort is to plant crop trees to prevent cutting for firewood and most important to add to family income by planting and harvesting fruit and nuts. One nut introduced is the traditional Maya Nut , or

masica. Families have planted and harvested nuts for sale and consumption. They have also learned to use the nuts in a kind of milkshake that the kids love. In some villages we have tripled the protein level in the children! A broader look for crop trees in the Chesapeake region might lead to all manner of benefits for farmers and others. Heaven forbid that we in the Bay watershed could learn from others!!!

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Elmer Weibley on April 06, 2018:

Excellent article and comment from Shannon Moore. The CREP program is way too complex and restrictive for many situations and landowners. I believe we need a simple straightforward approach. 1. Provide funding directly to each SCD who wants to participate 2. The SCD and local DNR office identifies interested participants 3. DNR prepares a Forest Stewardship Plan for the buffer 4. The SCD has the landowner sign a one page contract for a 20 year obligation 5. The SCD handles disbursement of the rental fee each year to the landowner 6. The SCD contracts for the tree plantings each spring and pays the contractor directly 7. DNR supervises and certifies the tree planting 8. The SCD and DNR monitor the planting and pay for needed maintenance There are simply too many agencies involved in delivering this to landowners. The amount of staff time to deliver an acres of riparian forest buffer is staggering. Lets just make it simple, verifiable and finally recognize that maintenance is a cost we must plan for or we will continue to visit failed plantings that while providing TMDL or WIP "credits" are not actually giving us the benefits we need

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stan mordensky on April 11, 2018:

Monocacy River Mainstem - Having listened to several land owners/farmers along the upper Monocacy River few have responded to voluntary programs and some are compensated for planting forested stream buffers. No one single act does so much to help the environment than the single act of planting one tree! Planting a 200-300 foot wide forested buffer is a low cost way to improve water quality and make a much cleaner Monocacy River. I wish many more of our Carroll and Frederick County land owners would participate. I also hope Carroll County revises their March 12, 2018 Carroll County Forum Revisions before findings are presented to BoCC for a decision. This report needs to reflect

the recent data received from Maryland DNR in studies of 2017 and reports of 2018. Both of these are accurate and specific to the Monocacy River rated as a class "4a" impaired stream with pollution of sediments, fertilizers and fecal chloroform bacteria, perhaps from live stock manure getting into the water supply. We all live downstream of some thing.-I am a current sitting member of the Monocacy Scenic River Board Advisory.

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