CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

PENNSYLVANIA FACT SHEET

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Riparian Forested Buffers for Healthy Water and Wildlife

What are Riparian Forested Buffers?

In simplest terms, a riparian forested buffer (RFB) is a streamside forest – either a natural forest that has been preserved or a replanted area, which is carefully planned, installed, and maintained. For best results, RFBs should contain a variety of native shrubs and trees and should be managed to prevent take over by invasive species. The minimum recommended buffer width (and the minimum accepted for participation in government cost share programs) is 35' on either side of the stream. However, a recent literature review found that buffers do not provide their maximum benefits until they are 100' or wider.[1]


Photo: CBF

Why are Riparian Forested Buffers Important for Clean Water?

RFBs act as filters by trapping pollution from nearby land before it gets to the stream. For example, in an agricultural setting, a buffer helps to filter out fertilizer, manure, and pesticides, which can be carried from farm fields by rain. RFBs also catch soil particles eroded from farm fields while the tree roots help protect the stream banks from erosion during flooding. Not only do RFBs prevent pollution from entering streams - they also help the stream to transform certain pollutants to be less harmful. A comprehensive study on the impacts of stream deforestation found that forested streams in eastern Pennsylvania were significantly better at transforming nitrates (a common pollutant) into harmless nitrogen gas through natural processes when compared to streams without forested banks.[2]

Every state involved in the Chesapeake Bay Blueprint (the plan to clean up the Bay) is planning to replant and restore RFBs to reduce pollution, but none more so than Pennsylvania. The Commonwealth is committed to establishing 158,813 acres of RFB on agricultural lands by 2025.[3] One reason that the states favor RFBs is that they are very cost-effective compared to other ways of reducing pollution. A recent study found that RFBs may be up to 29 times more efficient at removing nitrogen than urban and suburban stormwater practices.[4]

Why are Riparian Forested Buffers Important to Fish and Wildlife?


Photo: CBF

Streamside forests improve habitat for animals in and around the stream in many ways. The leaves and twigs that fall from the trees serve as important staples of the stream food web and support a diversity of life. The leaves and other woody materials are eaten by aquatic insects, which in turn serve as food for a variety of fish. Larger woody debris plays an important role as well. Fallen branches and downed trees fundamentally change and improve habitat structure for a variety of aquatic life. Standing trees provide much-needed shade to the stream. Cooler water temperatures benefit cold water fish like Pennsylvania's iconic brook trout. The trees and shaded waters also serve as important habitat for migrating songbirds and waterfowl.

Financial and Technical Assistance is Available

The Commonwealth and other Bay states cannot possibly meet Blueprint commitments without the cooperation of private landowners leading to the installation of RFBs on private property. In recognition of this challenge, the government offers financial and technical assistance to help landowners establish RFBs on eligible cropland and marginal pasture land adjacent to streams through the Pennsylvania Conservation Reserve Enhancement Program (PA CREP), funded through

the U.S. Department of Agriculture and the Commonwealth of Pennsylvania. Owners of eligible land who sign a PA CREP contract receive one-time incentive payments, a share of the cost to install the RFB, and annual land rental and maintenance payments for the duration of the contract, which is 10-15 years. The easiest way for a landowner to determine if his or her land is eligible is to contact a local Farm Service Agency office. The Chesapeake Bay Foundation's team of restoration specialists have assisted in planning and maintaining buffers through PA CREP for several years and can also help answer general questions. Finally, the recently improved PA CREP website is an excellent tool, and can be found online at www.creppa.org.

In recent years, CBF has worked with private foundation and public grant funding to further incentivize the planting of RFBs on farms through a voucher program called "buffer bonus." Through this program, agricultural landowners can earn vouchers for installing buffers that can be used to pay for any other best management practice on a farm, including structural practices like barnyard improvements and manure storage facilities, which can improve the overall value of the farm.

Maintenance is the Key to Success


Photo: CBF

Over the last several years working to install RFBs in Pennsylvania, CBF's restoration specialists and other restoration practitioners have come to realize that proper maintenance of new buffer sites, especially during the first few years of establishment, is critical for long-term success. Possibly the most important maintenance activity is judicious use of pesticides to reduce competition with the young trees for soil nutrients, to reduce the incidence of rodent pests, and to control invasive species. Canada thistle, Japanese knotweed, tree-of-heaven, and multiflora rose are common invasive plants found in RFBs. It is also important for landowners to monitor tree growth and survivorship, and to replace trees that do not flourish. CBF and partners developed a printed guide to buffer care that can help set landowners on the right path. In recent years, CBF has also partnered with the Arbor Day Foundation, the Richard K. Mellon Foundation, and Pennsylvania DEP to offer replacement tree seedlings and associated supplies to RFB landowners at no cost.

Citations

[1] Sweeney, B.W. and J.D. Newbold. 2014. Streamside forest buffer width needed to protect stream water quality, habitat and organisms. Journal of the American Water Resources Association. 50 (3): 560 – 584.

[2] Sweeney, B.W., et al. September 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. Proceedings of the National Academy of Sciences. 101(39): 14132-7.

[3] Pennsylvania Department of Environmental Protection. June 2012. Pennsylvania draft county level planning targets for Chesapeake Bay phase II watershed implementation plans. https://www.dep.state.pa.us/river/iwo/chesbay/docs/refmaterials/countytargets/Master%20Phase_2_DraftCounty_PlanningTargets_June_2012_final.pdf

[4] Jones, C., et al. 2010. How nutrient trading could help restore the Chesapeake Bay. World Resource Institute Working Paper. http://www.wri.org/sites/default/files/how_nutrient_trading_could_help_restore_the_chesapeake_bay.pdf

CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

Founded in 1967, the Chesapeake Bay Foundation is a nonprofit 501(c)(3) conservation organization dedicated to saving a national treasure—the Chesapeake Bay and its rivers and streams. Its motto, Save the Bay, defines the organization's mission and commitment. With headquarters in Annapolis, MD, offices in Maryland, Virginia, Pennsylvania, and the District of Columbia, and 17 field centers, CBF works throughout the Chesapeake Bay's 64,000-square-mile watershed to build an informed citizenry, advocate pollution-reduction strategy, and enforce the law. CBF is supported by more than 200,000 active members and has a staff of 170 full-time employees. Approximately 80 percent of CBF's $23.6 million annual budget is privately raised.

1426 N 3RD STREET | SUITE 220 | HARRISBURG, PA 17102
717/234-5550 | CBF.ORG