

PA COUNCIL OF TROUT UNLIMITED **POLICY ON RIPARIAN HABITATS**

January 2015

In October 2014, Governor Corbett signed into law House Bill 1565 which decreases the requirements of riparian buffers along High Quality (HQ) and Exceptional Value (EV) streams, as defined by the Department of Environmental Protection, for projects and development that require a National Pollutant Discharge Elimination System (NPDES) permit under *Title 25, Chapter 102, Erosion and Sediment Pollution Control*. However, any activity within 50' of a stream still requires a "Stream Encroachment Permit" under *Title 25, Chapter 105, Dams and Waterways Safety*. According to the PFBC, 33% of Pennsylvania's 86000 miles of waterways are listed as HQ or EV. These streams are the most pristine waters that we have within the Commonwealth and are now under danger from outside influences and development.

THE SCIENCE BEHIND RIPARIAN BUFFERS:

It is recognized that riparian habitats, defined as the vegetative zones bordering streams and rivers, have important influences in maintaining good populations of trout and aquatic insects, and also provide many other significant ecological and cultural functions and values. Many of Pennsylvania's riparian habitats have already been damaged and additional losses are threatened from urbanization; road construction; improper agricultural, lumbering and mineral extraction practices; and off-road vehicle use.

Riparian buffers provide multiple and varied benefits for the protection and conservation of waterways, fish and the people that benefit from them. Riparian buffers are an essential component of watershed management plans that provide numerous physical, chemical and biological benefits that include, but are not limited to, the reduction of non-point source run-off, attenuation of flood flows, absorptive capacity of soil particles to minimize the loss of organic and nonorganic chemicals, maintenance of stream water temperatures and aquatic habitat. The values of riparian stream buffers have been well documented in scientific literature.

The EPA (Mayer, et al, 2007) assessed the effectiveness of riparian buffer width on the removal of nitrogen. The results of this study revealed that wide buffers, those greater than 150', more consistently removed significant portions of nitrogen entering a riparian zone than those of lesser width. This study also indicated that buffers adjacent to headwater streams are the most effective management tool towards maintaining the health of the watershed. Doskey, et al, (2010) indicated that riparian vegetation stream water chemistry through a diverse process including direct chemical uptake and indirect influences such as supply of organic matter to soils and channels, modification of water movement and stabilization of soil. Deibel, et al, (2009) found that land cover is generally the most important driver of constituent loads and that a large proportion of pollutants can be eliminated from streams by the use of buffers. DeWalle (2010) and Ghermandi, et al, (2009) found that shading by a riparian buffer improves water quality through the minimization of the direct impacts of solar radiation of streams.

Research shows that a continuous riparian buffer helps to maintain stream functions as it drains a larger area, minimizing undesirable trends that negatively impact water quality (Maryland DNR 2005). The proximity of a riparian buffer in landscapes is also critical to the biological, chemical and physical functions of the adjacent waterbody. Riparian buffers that provide the greatest ecological benefits are generally complex and are composed if a mixture of grasses, shrubs and trees. Fully functioning mature riparian buffers that support diverse and complex plant communities require time to develop. PA Trout

believes that buffers cannot be removed from one area of a watershed and be replaced in another area of the watershed, or in a different watershed, and be expected to provide the same beneficial functions.

Given the appreciable focus on trout angling in Pennsylvania, it is important to note the significance of riparian buffers to our coldwater aquatic resources. Forested riparian buffers influence physical components of streams including water temperature dynamics, water quality, sediment regimes, food web resources and in-stream habitat heterogeneity (Jones, et al, 2006). In an analysis of 17 northeastern states, water temperature and riparian conditions were two of the top five threats to stream dwelling brook trout populations (Hudy, et al, 2005). Trout require temperatures between 45-60 degrees for optimal growth and survival. Any temperature above 68 degrees begins to significantly impact survival of trout (Piper, et al, 1982). PA Trout is especially concerned with the loss and/or maintenance of riparian buffers for the health of our watersheds and trout fishing across the Commonwealth. House Bill 1565 can adversely affect the water quality of our streams, not only for fishing, but for the multiple uses of the riparian buffers by outdoorsmen and use of water by the citizens of Pennsylvania.

In short, research shows the following are just some of the widely recognized functions and values of riparian habitats:

- 1) Trees and shrubs provide shade, maintaining cool water temperatures.
- 2) Roots of riparian vegetation bind soils and sediments near the stream edge, limiting bank erosion. This reduces channel widening and the influx of sediment into streams.
- 3) Escape cover for fish is provided by undercut roots along the banks, overhanging branches, leaning trees, and downed trees (large woody debris) in the channel.
- 4) Pool formation is triggered by interactions between stream flow and leaning and fallen trees (large woody debris). Trout populations are closely linked to the quantity and quality of pool habitats.
- 5) During floods, the roots of riparian vegetation further back across the floodplain also reduce soil erosion from the top of the floodplain (floodplain stripping), also reducing the influx of sediment into streams. Riparian vegetation also obstructs and slows high velocity flows, dissipating their energy through friction. This limits damaging scour. Along channel edges, the water is slowed by contact with roots, limbs of overhanging bank vegetation, and leaning trees. In mid-channel areas, downed trees (large woody debris) slow the water's velocity. A similar process occurs on the floodplains during floods. Both standing and fallen vegetation obstructs and slows the floodways, reducing downstream property damage and recharging floodplain aquifers. Riparian vegetation also induces the deposition of fine sediments, building up rich floodplain soils, and reducing in-stream deposition of fine sediments that cover important aquatic habitat and trout spawning areas.
- 6) Riparian vegetation promotes water quality protection by helping to capture polluted runoff and sediments from adjoining agricultural and developed lands.
- 7) Plant parts such as leaves, seeds, flowers, twigs, and branches that fall into the stream (allochthonous organic matter) are a very important part of the aquatic food chain, particularly headwater streams.
- 8) Naturally vegetated riparian zones provide habitats for a wide variety of life, including rare and endangered species. Riparian corridors typically have a higher number of plant and animal species than any other part of the landscape.

It is the policy of PATU to protect, conserve and restore natural vegetative stream buffers of sufficient width to protect stream ecosystems. PA Trout therefore encourages the following volunteer efforts:

1. More educational efforts are needed to inform Pennsylvanians of the importance of riparian habitats.
2. Streambank fencing programs need to continue to protect riparian zones from overgrazing by cattle, accompanied by revegetation through natural regrowth and native tree and shrub plantings, are very beneficial, and should be supported and expanded.
3. Streamside lawns could be converted to natural riparian vegetation wherever possible or practical.
4. Where proposed developments such as parking lots, structures, and roads plan to occupy riparian areas, restoration to natural vegetation should be carried out where feasible. We understand that in many places, economic constraints will limit this type of restoration of riparian areas. But there are places where, for economic, public safety and environmental reasons, infrastructure could be moved to higher ground and out of the path of floodwaters. All proposed projects that require an NPDES permit are available for review and comment through the County Conservation Districts. More efforts are needed to educate the public on how to review and comment on these permits.
5. For long-term conservation of riparian lands, programs that promote the acquisition of streamside buffers with willing landowners through voluntary perpetual easements or purchase should be encouraged.
6. Managers of public resource lands, such as state forests, state parks, state game lands, and the Allegheny National Forest, should be tasked to take particular care for maintaining and restoring the integrity of riparian areas and utilize their lands to showcase exemplary streamside vegetative management.
7. Published documentation instructs how to best to restore and conserve riparian habitats (PA DEP, BMP).
8. TU members and the general public should report any damage to riparian areas due to development, highway construction, recreation, timbering, mining and agricultural practices to the proper enforcement agencies to verify these actions are permitted activities. These agencies would include the County Conservation Districts, Department of Environmental Protection and the PA Fish & Boat Commission.