



Riparian Restoration to Promote Climate Change Resilience

Due to rises in global temperatures projected during this century, riparian zones and the water bodies they surround are likely to face dramatic changes. These zones of forested areas along the banks of rivers, streams, and lakes host a tremendous amount of biodiversity and link many aquatic and terrestrial ecosystems, acting as a corridor for wildlife. But regional climate change models predict increased stream temperatures, alterations in precipitation, and shifts in the distribution of plants and animals that can disrupt the ecological services these systems provide. Such changes are likely to impact the abundance of vital coldwater species, such as the Eastern Brook Trout, and pose major challenges for conservation and natural resource management. Given the observed and projected changes, resource managers need tools that help them create more adaptive and resilient landscapes.



Bryan Moore/Trout Unlimited

By locating the best spots to plant trees managers can provide shade to reduce impacts from climate change. Volunteers above plant trees to reforest the riparian zone at Big Run stream in West Virginia.

An innovative web-based tool - funded by the Appalachian Landscape Conservation Cooperative (LCC) and developed by researchers from the U.S. Forest Service and

the University of Massachusetts - is allowing managers to rapidly identify high-priority riparian targets for restoration to make more resilient in preparation for changes in future climate. The Riparian Restoration Prioritization to Promote Climate Change Resilience (RPCCR) tool identifies vulnerable stream and riverbanks that lack tree cover and shade in coldwater stream habitats. By locating the best spots to plant trees in riparian zones, resource managers can provide shade that limits the amount of solar radiation heating the water and reduces the impacts from climate change. This well-established management strategy will benefit high-elevation, cold-water aquatic communities.



Jason Coombs

Web map viewer of the Riparian Restoration Prioritization to Promote Climate Change tool that will allow users to rapidly identify high-priority riparian targets for restoration.

An Appalachian Priority
 Nationwide, it is estimated that more than \$1 billion has been spent on stream restoration activities in recent years. Projects targeting restoration of riparian areas are a

priority of many federal and state agencies and NGOs in the region, many of which are participating member organizations that make up the Appalachian LCC. These partner organizations focus on re-establishing forested riparian areas because of the many benefits of an intact, riparian corridor including the filtering of drinking water and greater corridor connectivity for plants and animals.

Supporting Ongoing Monitoring and Modeling Efforts

This management tool will be critical to those facing immediate on-the-ground restoration and resource decisions in the face of observed and projected climate change. Managers can tailor it to their own specific needs by specifying the amount of

canopy cover or the location of the area on the landscape. In addition, a web viewer built in combination with the tool allows users to visualize GIS data layers pertinent to elevation and land cover of the landscape, locations of dams and gas wells, and data pertaining to the presence of cold-water dependent species such as Eastern Brook Trout. Both the research and tools from this project are being linked directly with ongoing and future stream flow, temperature, and biological response monitoring and modeling efforts within the DOI Northeast and Southeast Climate Science Center and neighboring LCCs. The prioritization tool and web viewer are available on the Appalachian LCC Web Portal (<http://applcc.org>).



USFWS

Eastern Brook Trout



Streams such as Lynn Camp Prong in Smoky Mountain National Park provide vital habitat for coldwater species.

For More Information:
Visit this Research Project's Web Page:
<http://applcc.org/research/dst-restoration-under-climate-change-team>

Contact the Appalachian LCC:
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