MUNICIPAL CLIMATE ACTION OPPORTUNITY

Planting and protection of forested riparian buffers

The Kittatinny Ridge's Exceptional Value and High Quality streams will need protective action to weather the impacts which warming summer temperatures will have on their aquatic life. Coldwater fishes such as the native brook trout, Pennsylvania's state fish, are highly sensitive to the in-stream temperature increases projected to occur as a result of climate change. Major losses of suitable habitat are expected in Pennsylvania as in-stream temperatures increase with rising air temperatures. Summer heat waves will take the greatest toll on eggs and small fish fry. And it is not only the iconic trout that will suffer; scientists expect the overall ecology of coldwater streams to suffer as summer air temperatures rise. Fortunately, these lethal impacts can be offset by creating and preserving areas of forested riparian buffers which help maintain the cooler temperatures trout need to thrive.

Source: US EPA

In addition to moderating harmful temperature increases, streamside (or 'riparian') tree cover also provides a host of other ecological benefits. Forested buffers improve stream bottom habitat quality, increasing the amount as well as the quality of usable streambed area, enabling streams to support more aquatic life. Riparian trees also stabilize stream banks, trap sediments, reduce pollutant loads and support a richer aquatic food web, and create streamside habitat for wildlife. The presence of tree cover is linked to designation as Exceptional Value streams, a Pennsylvania designation of highest quality waterways, and an indicator of the health of the stream ecosystem.

The importance of establishing forested riparian buffers to provide cooling shade becomes self-evident when one considers that brook trout require water temperatures between 45 and 60 degrees for optimum health, and that other coldwater species have similar requirements. Such conditions typically require shading from tree canopies in the summer: unshaded streams have been found to be up to 20 degrees warmer in the summer than shaded streams and to experience daily temperature swings above the 5 degree tolerance of key species in the food web. Fortunately, even in areas where it will not be feasible to create continuous forested reaches on all streams, adding new forested buffer patches can improve habitat availability for cold water species. Coldwater fishes are able to move through warming stream reaches when sufficiently interspersed with pockets of cooler, shaded waters.

A number of conservation and scouting organizations in the region actively support the creation of riparian buffers and funding has been provided to past projects from various state agencies. Municipalities may benefit from partnering with local conservation partners such as watershed associations, Trout Unlimited, and land trusts to help in acquiring grant funding and in recruiting volunteers to install plantings in restoration sites.

Source: Green Valleys Watershed Association

Where to get more information

Lehigh Valley Planning Commission's guide, *Riparian and Wetland Buffers, Guide and Model Regulations*, provides information on the legal authorities for riparian buffers provided in the Pennsylvania Municipal Planning Code, and provides a model riparian buffer ordinance. At: http://www.lvpc.org/pdf/riparianBuffers.pdf

Riparian Buffer Preservation by Pennsylvania's Department of Environmental Protection (DEP) provides an overview of different tools for protecting riparian corridors under the Pennsylvania Municipal Planning Code plus case studies from eastern PA. http://www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/streamreleaf/Docs/1506bufferpreserve.pdf

DEP's *Riparian Buffer Toolkit* provides a step by step guide for establishing and maintaining forested riparian buffers. At: http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/StreamReleaf/Forestbufftool/default.htm

Information on applying for funding through the PA Dept. of Conservation and Natural Resources riparian grant program can be found at: http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20031999.pdf

Numerous resources on establishing riparian buffer ordinances are available on the website of the Pennsylvania Land Trust Association (PALTA). At: http://conservationtools.org/library_items/topic/146-Riparian-Buffer-Protection-Ordinances

The Nazareth Area Multi-municipal Comprehensive Plan presents one approach to assessing the for riparian buffer installations. http://www.lvpc.org/pdf/nazarethplan/nazareth03.pdf

PALTA developed a *Model Riparian Buffer Easement Agreement* for landowners. At: http://conservationtools.org/guides/84-riparian-buffer-protection-agreement

Bushkill Stream Conservancy, *Establishing Streamside Buffer Areas in Your Park or Community*, lists beneficial native trees to use, provides step by step guidance on establishing a buffer, and identifies local examples of installed buffers. At: http://bushkill.org/BSCBufferGuide_web.pdf

Chesapeake Bay Foundation's *Landowner Guide to Buffer Success* provides recommendations on upkeep of forested buffers. At: http://www.cbf.org/document.doc?id=257

Both the Pennsylvania Organization for Watershed and Rivers and Trout Unlimited are knowledgeable about riparian buffers and may also be useful sources of information. http://pawatersheds.org/ and http://www.patrout.org/