Riparian Zone Restoration

Keeping Texas Native

Objective

Riparian Zone Restoration (RZR) is a new initiative designed to increase vegetation quantity and quality along streams as a means of improving water quality. Past and present stream work efforts have been aimed at controlling flooding and erosion with the water quality benefit as an add-on to the more structural channel work. Our group in the Water Resource and Evaluation section (ERM, WPD) would like to focus more on water quality driven restoration projects, targeting areas in Austin's waterways that will most benefit from healthy riparian vegetation, and collaborating in other mission projects (erosion, flood, utility) to insure their revegetation components have a clear water quality benefit to Austin's streams.

The Master Plan directs us to:

A. Protect and improve Austin's waterways and aquifers for citizen use and the support of aquatic life.
B. Improve the urban environment by fostering additional beneficial uses of waterways and drainage facilities.
C. Optimize City resources by integrating erosion, flood and water quality control measures.

This program aims to accomplish these Master Plan missions by creating water quality improvements that also function as wildlife habitat, urban forests with trails and educational opportunities, and by better utilizing the revegetation portion of CIP funds.

There is plenty of science based literature detailing the water quality and ecological benefits of riparian vegetation. A recently published Austin study (Chin et al, 2010) statistically links "improvements in key ecological response variables to better conditions in habitat" such as greater riparian vegetative width. This indicates that greater water quality benefits will result through the integration of physical and biological restoration factors. A key to increasing the denitrification potential of the riparian soils is to increase the moisture and organic content of the soil (Groffman, 2003). Both of these can be accomplished by increasing the height, density, and canopy cover of the vegetation along the stream. The goal of this program is to facilitate and directly implement ecologically functional riparian buffers in Austin's stream network.

Benefits of Healthy Riparian Zones

1. Improved creek water quality
2. Improved stormwater filtration.
3. Increased stormwater infiltration.
4. Increase biological habitat.
5. Increased terrestrial wildlife habitat.
6. Reduced stream bank erosion.

7. Increased Greenbelt/open space amenity.
8. Reduce maintenance costs associated with mowing.
9. Provides developers with credits/incentives towards stormwater retention.

Cost

We believe that much of the money required to initiate and even maintain these restoration efforts is already being spent by the City in our extensive vegetation maintenance efforts around town. By increasing the height and diversity of vegetation along streams that are presently being mowed through various city maintenance programs, we can decrease the long term financial and ecological costs to the City of Austin. With more integration between disciplines within the Masterplan Integration Process, CIP funds that are presently being used for revegetation on a range of stream projects could be more directly targeted to enhance riparian function and improve water quality. This effort requires a small amount of additional funding in the short term and provides substantial cost savings, both fiscal and environmental, in the long term.

References

Chin, Anne, Frances Gelwick, David Laurencio, Laura R. Laurencio, Morgan S. Byars and Mateo Scoggins, 2010. Linking Geomorphological and Ecological Responses in Restored Urban Pool-Riffle Streams. Ecological Restoration 28 (4): 460-74.

Groffman, Perter M., Marshall Kamau Crawford, 2003. Journal of Environmental Quality 32(3): 1144-1149.