Reedy Creek: A Stream Science and Spatial Statistics Approach

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Stream Restoration Design & Risks

As stream restoration generally lacks scientific literature both for development and review for consensus on metrics of success, the Reedy Creek Restoration Project proposal finds itself in an evolving tradition. Roni and Beechie of the National Marine Fisheries propose a comprehensive, multi-step process for stream restoration design and execution to combat the starting lack of stream restoration technique literature. Several goals of the Reedy Creek proposal fail to successfully evaluate the multiscale nature of stream restoration and biological, chemical, and physical risks associated with the individual steps throughout the process using this template.

Using Roni and Beechie’s metrics, the original Reedy Creek proposal raises some concerns. The initial project only displays concern for biological, chemical, and physical processes on a regional scale by adhering to federal regulations to reduce sediment and pollutants in the Chesapeake Bay, ignoring city and local scales. In addition to attempting to restore portions of the stream with already healthy soils, the project does not provide a dedicated plan to prevent erosion after its completion. The project fails to address the increased vulnerability of streams to infiltration by invasive species, such as English ivy or Blackhawk viburnum, during restoration and the potential loss of habitat or habitat quality (Bond and Lake 2003).

As the stream restoration project, using these metrics, may create an unhealthy environment at several local and stream scales, evaluation of alternatives may provide a compromise beneficial to the Chesapeake Bay and Richmond. Perhaps the simplest alternative solution, reduction of impervious surfaces in basins and watersheds contributing to the James River, provides significant local benefits during our preliminary analysis. Streamflow velocity and runoff of both water and pollutants are reduced as a result of water’s increased exposure to landscapes capable of slowing and absorbing water into the water table, as well as cycling nutrients.

Acknowledgements & Citations


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