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Prioritizing Riparian Corridors for Water Quality Protection in Urbanizing Watersheds

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ABSTRACT

The cumulative effects of urbanization on riparian corridors can decrease the quality of water entering local streams, and ultimately adversely impact drinking water reservoirs of local municipalities. As such, a GIS and remote sensing based analysis tool called the Water Quality Corridor Management (WQCM) model was designed to identify and prioritize highly functioning riparian ecosystems for the preservation of stream corridor conditions. Preservation priority among various riparian corridors is established in the model by analyzing five parameters associated with stream corridor conditions (vegetation type, erosion potential, surface slope, percent of the stream contained within the Federal Emergency Management Agency (FEMA) 100-year floodplain, and amount of the stream corridor contained within a subwatershed); and each parameter is weighted and scaled based on what conditions are most important to protect. Because data associated with each parameter are readily available and easily manipulated via spatial analysis techniques, the WQCM model functions as a flexible methodology for predicting stream corridor conditions and allows watershed managers to identify potential preservation opportunities to ensure long term ecological functioning that protects water quality. These corridors can then also provide urban planners with potential natural spaces for urban dwellers, meeting multiple benefits requirements imposed by many municipalities.

KEYWORDS

Watershed Management Planning, GIS Modeling, Remote Sensing, Riparian Assessment, Riparian Preservation and Restoration, WQCM Model

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