

Public Abstract

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Title:Quantifying Riparian Canopy Energy Attenuation and Stream Temperature Using an Energy Balance Approach

Forested riparian buffers play an important role in controlling stream water quality, including temperature. Few studies have examined relations between forest canopy and stream temperature in the distinct forests of the central U.S. Climate and stream temperature data were collected from two stream reaches on the border of southern Missouri's Ozark region, USA, from October 2009 to September 2010. Data were compared to climate measurements taken above the forest canopy to better understand the forest's role in controlling stream water temperature. Canopy density and spatial variability of climate within the riparian buffers were measured over the study year. Net solar radiation was found to be the most important controller of stream temperature, and was greatly reduced by the presence of the riparian canopy. Stream temperature was on average warmest in August for the two study reaches. Results suggest that riparian management practices in Missouri should potentially be altered to include wider buffers (40 meters) with less thinning (density dependent on stream size and discharge) to maintain pre-harvest stream temperature regimes.