

Southeastern Section - 57th Annual Meeting (10–11 April 2008)

**Paper No. 31-8**

**Presentation Time:** 1:30 PM-5:30 PM

**THE EFFECTS OF ARTIFICIAL IMPOUNDMENT ON DOWNSTREAM WATER TEMPERATURE IN UPPER PIEDMONT STREAMS, GREENVILLE, SOUTH CAROLINA**

[GRANGER, Sunny Rae](#) and DRIPPS, Weston R., Earth and Environmental Sciences, Furman University, 3300 Poinsett Highway, Greenville, SC 29613, [sunnyrae.granger@furman.edu](mailto:sunnyrae.granger@furman.edu)

Artificial river impoundments can have profound thermal impacts on downstream reaches. The primary objective of this study was to assess the impact of small river impoundments on Upper Piedmont streams in Greenville, South Carolina. Water temperature loggers continuously monitored upstream, in-lake, and downstream segments of five small impounded systems with surface-release mechanisms from June 2007 to January 2008. In addition, spatial stream temperature profiles were measured both up and downstream for each site in order to show the effects of lakes on in-stream thermal regimes. The greatest thermal impact of the lakes was on the stream reaches just downstream of the impoundments. Compared to water temperatures measured 50 meters upstream, instream water temperatures 50 meters below the impoundment were 5.0°- 8.7°C higher at three sites, and 0.4°-1.2°C lower at two sites. In addition, the natural summer diurnal temperature range below three of the dams was decreased by as much as 1.78°C compared to the upstream diurnal variability. Two sites showed slight increases in summer downstream diurnal variability. Results of this work suggest that lake volume and surface area, dam release mechanism, and the amount of ground water seepage below the dam are the primary controls on the magnitude of the thermal disturbance. Although not quantified in this study, the ecological effects of such temperature disturbances on stream biota communities and densities are potentially significant.

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[General Information for this Meeting](#)

Session No. 31--Booth# 19

[Undergraduate Research Session \(Posters\) II](#)

Hilton Charlotte University Place: University Lake Ballroom Suites A, B, C

1:30 PM-5:30 PM, Friday, 11 April 2008

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