



## USDA-CSREES 2005 National Water Quality Conference

### Influence of geomorphology, Forest Age and Woody Debris on Stream Nutrient Processing in Northern Hardwood Forests

#### *Abstract:*

*Effects of woody debris on nutrient processing were assessed at 72 debris dams within the Porcupine Mountains State Park, Michigan, following a 2x2x2 design with treatments of forest age, stream gradient and stream size. DIN, DIP, DOC and POC were sampled monthly above and below each dam from May to September 2003. Preliminary analysis suggests that debris dams had little effect on nutrients in May and June. However, nutrient processing above dams was enhanced from July-September as water temperatures increased and discharge decreased. DIP and DIN concentrations were low ( $<20 \mu\text{g l}^{-1}$ ) across most sites and dates. DIN and DIP were typically lower below dams, suggesting nutrient retention above debris dams. DIN removal was especially prevalent in low gradient reaches of the secondary growth watershed from July-September. DOC ranged from 0.4 to 13  $\text{mg l}^{-1}$ , while POC ranged from 0.1 to 1.2  $\text{mg l}^{-1}$ . All stream reaches in the old growth forest and high gradient reaches of the secondary growth forest demonstrated a decrease in POC and increase in DOC below debris dams suggesting increased processing of particulate matter. Low gradient stream reaches within the secondary growth watershed, however, demonstrated loss in POC and DOC indicating enhanced carbon storage (July-September).*

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