

Poster presentation

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Predicting geomorphic stability in low-order streams of the western Lake Superior basin

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Width:depth ratios, entrenchment ratios, gradients, and median substrate particle sizes (D50s) were measured in 32 second- and third-order stream reaches in the western Lake Superior basin in 1997-1998. More than 700 measurements of suspended sediment concentration during snowmelt, baseflow, and precipitation events were taken in these reaches during 1997-1999. In-stream and riparian habitat quality were also assessed, as was land use and land cover in each stream's watershed. The stability of each stream reach was re-evaluated in 2010-2011 and geomorphic assessments were repeated. Streams were considered unstable if the Rosgen geomorphic stream type had changed or if the width:depth ratio had more than doubled. Logit regression was used to determine stability over the course of the study. Stability after 12 to 14 years was best predicted by stream geomorphology, suspended sediment and bedload outputs, and the presence of wood in the riparian zone and streambed. Suspended sediment outputs could be predicted by stability over 12 to 14 years, geomorphology, discharge, wood availability, and by agricultural and road densities within the streams' watersheds.

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