

# A NATURAL CLASSIFICATION OF STREAM MORPHOLOGY AND DETECTION OF CHANNEL UNIT PERIODICITIES IN THREE MISSOURI STREAMS

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## ABSTRACT

Recent declines in Missouri smallmouth bass raise concerns about the influence of anthropogenic modification on stream morphology and habitat. Channel units provide the necessary framework for linking the ecological, hydrological, and geomorphological knowledge needed to understand the interactions controlling smallmouth bass populations. However, channel units remain poorly defined and unit differences are often assumed. This study uses cluster analysis to partition morphological data and compares resulting groupings to channel units. The two groupings are similar at the basic channel unit hierarchical level, if at all. The spectral envelope is also used to determine channel unit repetition. Riffles and runs do not repeat at the  $3-6W$  range found in many other studies. However, there is evidence for low frequency behavior among almost all channel unit series. Further methodological advancements and comparative studies using established methods are required to use the spectral envelope with confidence in stream applications.