

IMPACTS OF SUSPENDED AND DEPOSITED SEDIMENT ON THE BENTHIC INVERTEBRATES AND FISHES IN A MISSOURI OZARK STREAM

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ABSTRACT

Sediment is suspected in the decline of sensitive-aquatic organisms in the Osage River basin of Missouri. In this study, I monitored sediment dynamics and evaluated corresponding linkages with benthic invertebrate and fish assemblages as it related to highway construction activity adjacent to an Ozark stream in southwest Missouri.

The most notable effect of road construction on the sediment dynamics in the Brush Creek watershed was the overall change in suspended sediment concentration which was 53% greater downstream of the highway versus upstream during road construction. The lack of a significant shift in biomonitoring metrics and composition of macroinvertebrate and fish assemblages during construction reflected similar, non-significant trends in deposited sediment. Correlations between sediment measurements and biomonitoring metrics were found for macroinvertebrate and fish assemblages but were inconsistent among habitats. Ordination analysis showed suspended sediment and surface cover of deposited sediment influenced the composition of the macroinvertebrate assemblage immediately before and after the start of road construction.

The results of this study will help future investigators identify normal and excessive sediment conditions in Ozark highland streams with similar landuse types. Furthermore, the additional resolution of sediment dynamics and linkages with aquatic biota gained by this study will aid in the development of water-quality standards for sediment in Missouri streams.