LANDSCAPE AND INCHANNEL FACTORS AFFECTING THE DISTRIBUTION AND ABUNDANCE OF RIVERINE SMALLMOUTH BASS IN MISSOURI

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ABSTRACT

I developed a series of spatially-nested research objectives to identify habitat elements related to the distribution and abundance of riverine smallmouth bass *Micropterus dolomieu* in Missouri. The range of smallmouth bass was identified using a few natural-occurring landscape variables: coarse-textured soils within the watershed, watershed relief, and soil permeability. Relative abundance could be predicted within this range using natural landscape and stream segment variables: soil permeability, channel gradient, stream size, spring-flow volume, and local slope. Densities of smallmouth bass in stream segments depended on interactions between land use and particularly important natural-occurring features (coarse-textured soils and soil permeability). Higher relative abundances based on natural features related to higher densities in pasture watersheds whereas urban watersheds generally had the lowest densities of fish regardless of natural conditions. Densities of young of year were higher in stream segments with high spring flows compared to low spring flows but not for other age classes. Young of year used warmer microhabitats than adults regardless of spring-flow influence. Velocity was the most significant variable identifying microhabitats used by young of year whereas depth was important in small streams and stream segments classified by pasture land use.