

Comparison of Habitat Suitability Criteria for Smallmouth Bass (*Micropterus dolomieu*) from Three West Virginia Rivers

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ABSTRACT: To assess differences in habitat suitability criteria for smallmouth bass (*Micropterus dolomieu*), we collected habitat use data in three West Virginia streams that varied in size and channel morphology. We used instream observation techniques to collect information on microhabitat use by young-of-year, juvenile, and adult smallmouth bass. We examined differences among the distributions of each habitat variable used by smallmouth bass size classes within and among the three rivers using chi-square analyses. Habitat suitability criteria were developed using nonparametric tolerance limits and compared with other smallmouth bass criteria. With one exception, juvenile smallmouth bass did not differ from adults in their use of depth, mean column velocity, and focal point velocity. Water velocities greater than $18 \text{ cm} \cdot \text{s}^{-1}$ were rarely used in the three rivers, and the range of mean column velocities used by juveniles and adults was significantly different among the three streams. Focal point velocities were significantly different, but the majority of observed smallmouth bass used focal point velocities less than or equal to $12 \text{ cm} \cdot \text{s}^{-1}$ in all three rivers. Although the use of nonparametric tolerance limits facilitated comparisons among streams, optimal and suitable ranges were different among the West Virginia streams, as well as among those from streams in other parts of the United States. We recommend that managers conduct a transferability test for choosing and applying the habitat suitability criteria that best defines the optimal and suitable ranges of habitat use by smallmouth bass.

KEY WORDS: Nonparametric tolerance limits, transferability, utilization criteria.