

Occurrence Patterns of Mottled and Slimy Sculpin in Wisconsin's Kickapoo River Drainage: Implications for Stream Management

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Mottled Sculpin (*Cottus bairdii*) and Slimy Sculpin (*C. cognatus*) are important coldwater invertivores and were once abundant throughout Wisconsin Driftless Area streams, but poor past land management led to population declines and extirpation from many streams. Little is known about their current occurrence patterns and habitat needs that would benefit future habitat management and reintroduction efforts. We sampled 60 randomly selected streams stratified across all five HUC 10 watersheds in the Kickapoo River Drainage. At each stream, I sampled a reach (i.e., 150-300m) using single-pass backpack or barge electrofishing. Habitat sampling included measurable and observational characteristics of instream (i.e., depth, velocities, substrate, ect.) and riparian zone features (i.e., riparian cover, streambank angle, ect.). Sculpin were found at 42% of streams sampled (i.e., 9 with Slimy Sculpin, 16 with Mottled Sculpin) and cooccurred at one stream. Statistical analyses include 2-class imbalanced and balanced random forest models for presence and absence patterns, generalized linear modeling for relative abundance and size structure trends, and Kolmogorov-Smirnov tests to assess size structure differences among watersheds. Results identified important watershed and instream habitat features relating to both sculpin species. This study offers valuable insights to guide future management and advance a holistic, assemblage-based fisheries approach.