

ASSEMBLAGE STRUCTURE AND SHALLOW-WATER HABITAT USE BY  
SMALL-BODIED FISHES AT LOWER MISSOURI RIVER SANDBARS

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ABSTRACT

Populations of many native big-river fishes have declined since channelization and flow regulation contributed to losses of shallow-water habitat (SWH) on lower Missouri River (LMOR). Existing point and wing-dike sandbars represent a potentially important source of SWH to fishes during early ontogeny within the main channel of LMOR. Small-bodied fishes were sampled using pre-positioned electrofishing devices from 0.0-0.5 m water depths adjacent to four point and four wing-dike sandbars on LMOR between July and October, 2005. A suite of associated environmental factors were also measured. Habitat use and assemblage structure relative to three spatial (sandbar type, region within sandbars, and distance from shoreline within region) and two temporal (month, diel), and environmental factors were evaluated using Analysis of Variance, Detrended Correspondence Analysis, and Canonical Correspondence Analysis.

Samples yielded 49 species from 13 families in depths 0.0-0.5 m; most fishes were  $\leq 105$  mm TL. Fish mean length increased but abundance decreased from July to October. Ordination analyses revealed that the assemblage was organized into body-length subgroups. Fish assemblages were not different between point and wing-dike sandbars. Instead, fishes aligned along a depth-velocity gradient relative to body length. Shallow (*ca.* 0.12m), near-shore areas were dominated by fishes  $< 35$  mm TL during the day, but larger fishes (e.g., 70 mm TL) moved nearer to shore at night. This research shows that main-channel sandbars provide nursery to many fluvial fishes during early ontogeny and that sandbars play an important role as nursery in large regulated rivers.