

Public Abstract

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Title: USE OF MAIN CHANNEL AND SHALLOW-WATER HABITAT BY LARVAL FISHES IN THE LOWER MISSOURI RIVER

The larval stage of a fish's life cycle is often the most environmentally vulnerable, and often acts as a recruitment bottleneck. Loss of nursery habitat has been shown to be a major factor in decreased survival of fishes through the larval stage in altered rivers. I developed a series of research objectives to characterize nursery habitat for the larval fish assemblage, native carpsucker spp./buffalo spp. *Carpionodes* spp./*Ictiobus* spp., and chub spp. *Macrhybopsis* spp., and invasive silver/bighead carp *Hypophthalmichthys molitrix/nobilis* in the lower Missouri River. There was no significant difference in larval fish assemblage or silver/bighead carp catch-per-unit-effort (CPUE) between main-channel and sandbar aquatic-terrestrial-transition-zones (0-1 m deep, ATTZ), but carpsucker spp./buffalo spp. and chub spp. CPUE was significantly higher in sandbar ATTZ. Local-environmental conditions (current velocity, water depth, substrate type, and water temperature) explained a greater amount of variance than geomorphic (sandbar type, sandbar region, shoreline slope, and shoreline sinuosity) or hydrologic conditions (change in discharge from the previous day, mean of two previous days, mean of four previous days). The larval fish assemblage and carpsucker spp./buffalo spp. selected areas within sandbar ATTZ with water depths  $\leq 10$  cm, and current velocities  $\leq 5$  cm/s. Chub spp. selected depths between 20-50 cm and areas 2-3 m from the waters edge. Silver/bighead carp showed no habitat selection based on water depth or current velocity. These results can be used to provide guidance in habitat rehabilitation projects within the lower Missouri River.