

Centrarchid Assemblages in Oxbow Lakes of the Mississippi Alluvial Valley Relative to Land Cover

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Abstract: Degradation of oxbow lakes in the Mississippi Alluvial Valley (MAV) has occurred largely as a result of deforestation since settlement in this region began in the 19th century. Centrarchid species dominate the recreational fisheries of this region and effects on their composition are of particular concern. We examined surrounding land use of oxbow lakes in the MAV in relation to their centrarchid assemblages. Percent of agricultural land within 10, 50, 500, 1000, and 5000 m bands was calculated for 55 lakes in Mississippi and Arkansas using ArcGIS software. Fish were collected using daytime electrofishing from 2006 to 2010. Lakes were strategically chosen within each state to provide diverse land-use compositions as well as physical and chemical differences. Centrarchid assemblages among lakes varied from a dominance of a few tolerant species to multiple moderately-tolerant species depending on land cover (principally agriculture, forest, wetlands). The presence/absence and percentage composition in the assemblage of key centrarchid species varied depending on the relative composition of agriculture, wetlands, and forestland covers. Our results suggest approaches for emphasizing selected aspects of centrarchid assemblages and for prioritizing management and restoration of selected oxbow lakes.

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