Are Reservoirs Ecological Sinks for Recruitment of Pallid Sturgeon?

Steven H. Ranney and Christopher S. Guy, U.S. Geological Survey, Montana Cooperative Fishery Research Unit, Montana State University, P.O. Box 173460, Bozeman, Montana 59717

Molly A. H. Webb and Kevin M. Kappenman, USDI. Fish and Wildlife Service, Bozeman Fish Technology Center, 4050 Bridger Canyon Road, Bozeman, Montana 59715

William M. Gardner, Montana Fish, Wildlife and Parks, 215 W. Aztec Drive, PO Box 938, Lewistown, Montana 59457

Natural recruitment of pallid sturgeon (*Scaphirhynchus albus*) in the Missouri River upstream of Fort Peck Reservoir has been nonexistent for at least four decades. Deviations from the natural river morphology are likely driving the lack of natural recruitment. An obligate riverine species, pallid sturgeon require large drift distances (> 245 km) before transitioning to benthic habitats. Insufficient lotic habitat downstream from hatch locations because of river impoundment is one hypothesis for the lack of pallid sturgeon recruitment. During 2008, we sampled the aquatic habitat in the headwaters of Fort Peck Reservoir. The headwaters were described as separate habitat units based on visible characteristics, i.e., "river," "transition zone," "side channel," "lake," and "reference." Velocity decreased longitudinally through the headwaters of Fort Peck Reservoir suggesting that there is insufficient drift distance for pallid sturgeon to transition through the larval stage. Water-quality data examined at the diel scale indicated abrupt changes in temperature, dissolved oxygen, and pH that may negatively influence larval pallid sturgeon. These diel fluctuations in water quality parameters correlate with an increase in discharge from Canyon Ferry Reservoir. Further research includes spatial analysis of larval drift dynamics, evaluating larval sturgeon survival under fluctuating water-quality conditions, and experimentally evaluating larval pallid sturgeon survival in the headwaters environment.