

DETERMINATION OF THERMAL OPTIMA AND TOLERANCE FOR YOUNG-OF-THE-YEAR SHOVELNOSE STURGEON GROWTH AND

Kevin Kappenman, Cal Fraser, Matt Toner, Linda Beck, and Molly Webb, USDI Fish and Wildlife Service, 4050 Bridger Canyon Rd., Bozeman, MT 59715, kevin_kappenman@fws.gov

Shovelnose sturgeon (*Scaphirhynchus platyrhynchus*) are considered abundant in Montana in the Missouri River and smaller tributaries, but their numbers have been significantly reduced throughout the lower Missouri and Mississippi. Water temperature plays a key role in determining the persistence of this species, however specific thermal optima and tolerances are not known. We performed a replicated lab experiment that exposed juvenile shovelnose sturgeon to twelve temperatures ranging from 8 to 30 °C at 2 degree intervals to determine the specific thermal optima for growth and survival. This study has important implications to understanding the life history of shovelnose sturgeon in the wild and significant hatchery implications. The thermal requirements established in this work may help protect habitat critical to the species and guide restoration efforts, such as determining temperature regime requirements for regulated and hydroelectric impacted rivers and establishing new guidelines for conservation propagation. By reducing thermal stress in hatcheries, we can increase growth, decrease incidence of disease and infection, and produce healthier fish that are more suited to survival upon release. The information we present will also be relevant to pallid sturgeon recovery initiatives and may help explain why shovelnose sturgeon thrive while pallid sturgeon remain threatened in the same rivers.