

CONFIGURING LIBBY DAM OPERATION FOR RECOVERING THE ENDANGERED KOOTENAI WHITE STURGEON—WHAT WILL SOCIETY BEAR TO SAVE THIS ANCIENT SPECIES?^{AFS}

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Natural recruitment of white sturgeon (*Acipenser transmontanus*) in the Kootenai River became rare after Libby Dam became operational in 1972. Flow and temperature regulation resulting from dam operation have likely contributed to recruitment failure. Less than 600 wild individuals remain and the complete loss of the wild population is predicted by 2060. Before the wild adults vanish, 3000-6000 of their progeny from the Kootenai Tribe of Idaho's sturgeon aquaculture facility will have survived to maturity. However, recovery of the white sturgeon requires natural reproduction. Evidence suggests that a naturalized spring freshet is needed to initiate migration to the spawning reach. Spawning now occurs over sand substrate unsuitable for survival. The historic spawning reach, which is thought to be further upstream, is heavily embedded with sand. Previously, the spring freshet flushed fine sediments from spawning cobble and model results indicate that a higher river stage provided a survival advantage for early life stages. The US Fish and Wildlife Service's 2000 Biological Opinion (BiOp) implemented a tiered flow strategy to assess possible thresholds between recruitment success and failure. The BiOp also recommends increasing the discharge capacity of Libby Dam by 5,000 cfs in 2004 and an additional 5000 cfs by 2007. Unfortunately, Libby Dam cannot currently pass the additional 10 kcfs without the use of the spillway, and a spill of < 2 kcfs exceeds Montana's water quality standard of 110 percent gas supersaturation. Excess gas causes gas bubble trauma in river fish including federally listed (threatened) bull trout. Therefore, the Army Corps of Engineers is analyzing 10 alternatives to conform to the BiOp; all present challenges. Flows required to flush sediments may be prevented by human development in the flood plain. Survival of the species and public acceptance of recovery actions require shifting emphasis from a high spring peak to a gradually descending hydrograph, and from the spawning period to survival during the first few months of life.