

Public Abstract

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Title:Persistent Organic Pollutant Effects on Middle Mississippi River *Scaphirhynchus* Sturgeon
Reproduction and Early Life Stages

Populations of pallid sturgeon (*Scaphirhynchus albus*) and shovelnose sturgeon (*Scaphirhynchus platyrhynchus*) have been decline over the past century. The pallid sturgeon has been listed as a federally endangered species since 1997. Currently, Missouri and Mississippi River shovelnose sturgeon are found with egg and muscle tissue concentrations of chlordane and polychlorinated biphenyls (PCBs) at levels high enough for the Missouri Department of Health and Senior Services to issue consumption advisories for these tissues. Concentrations of these contaminants are also higher than those reported to affect reproduction in other fish species. Thus, contaminants may be a factor limiting reproduction in these species.

Chlordane and PCBs belong to a family of contaminants known as persistent organic pollutants (POPs), so named due to their persistence in the environment. Two studies were used to assess if these contaminants were capable of affecting reproduction and early life-stage *Scaphirhynchus* sturgeon. The first study exposed fertilized pallid and shovelnose sturgeon to two of the most potent POP chemicals, PCB-126 or TCDD. The second study was a reproduction study using wild-caught shovelnose sturgeon along with measuring POP, specifically PCB, organochlorine pesticide, and polybrominated diphenyl ether, concentrations in eggs to determine if environmental levels of these contaminants were capable of affecting development and survival of early life-stage shovelnose sturgeon.

Results from these studies indicated that pallid and shovelnose sturgeon were similar in sensitivity to PCB-126 and TCDD, suggesting that shovelnose sturgeon may be a suitable surrogate for assessing contaminant effects on pallid sturgeon. Furthermore, increased POP egg concentrations were associated with increased egg and larval mortality and reduced percent hatch indicating that POP contaminants are likely one factor impacting population declines of *Scaphirhynchus* sturgeon. This research may serve as the foundation for assessing contaminant related effects in the recovery of the pallid sturgeon.