UPPER BASIN PALLID STURGEON WORKGROUP

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17 March 2017

Wyatt Doyle and the Pallid Sturgeon Recovery Team
U.S. Fish and Wildlife Service
Columbia Fish and Wildlife Conservation Office
101 Park Deville Dr., Suite A
Columbia, MO 65203

(sent via electronic mail)

Re: Pallid Sturgeon monitoring priorities for the Science and Adaptive Management Plan

The Upper Basin Pallid Sturgeon Workgroup (Workgroup) appreciates the opportunity to provide input to the Pallid Sturgeon Recovery Team and the U.S. Fish and Wildlife Service regarding Pallid Sturgeon monitoring and population assessment priorities in the Upper Missouri River Basin. We are committed to the recovery of Pallid Sturgeon and hope that our expertise and understanding can contribute to the long-term success of the U.S. Army Corps of Engineers' Science and Adaptive Management Plan (SAMP) within their Missouri River Recovery Management Plan and Draft Environmental Impact Statement.

Recommendations and considerations were developed by the Upper Basin Pallid Sturgeon Workgroup through subcommittee and further collaboration is anticipated in participation with the Pallid Sturgeon population assessment planning workshop on March 21, 2017. Please contact us if there are questions or items in need of clarification.

Sincerely,

Zachary R. Shattuck

Zachary R. Shattuck, Chair
Upper Basin Pallid Sturgeon Workgroup

Cc:

Larry Gamble, U.S. Fish and Wildlife Service
Eileen Ryce, Montana Fish, Wildlife and Parks
Tyler Haddix, Montana Fish, Wildlife and Parks
Landon Pierce, U.S. Fish and Wildlife Service
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Dane Shuman, U.S. Fish and Wildlife Service
Ryan Wilson, U.S. Fish and Wildlife Service

(sent via electronic mail)

Included below are recommendations for effective monitoring of Pallid Sturgeon and the associated aquatic community of the Upper Missouri River Basin. Presented in no particular order of prioritization, items were broadly categorized into three fundamental objectives. While there are numerous means to collect the necessary data to meet objectives, it will be imperative that any long-term monitoring and evaluation include regular reporting and analysis. Furthermore, reporting should be focused at multiple scales (e.g., local, regional), and with periodic comprehensive synthesis to describe multi-year variation and trends. Finally, we appreciate this collective effort and look forward to future collaboration on this monitoring program.

1. Quantify and evaluate spatiotemporal trends in population dynamics and structure for wild and hatchery-reared Pallid Sturgeon, including:
    a. Abundance and survival
        i. To determine stocking success covariables and evaluate size distribution
    b. Growth and relative condition
        i. To monitor individual health by life stage and potential constraints
    c. Reproductive ecology
        i. To describe ages at maturity, sex ratios, spawning periodicity, and fecundity
    d. Genetic structure
        i. To evaluate effective population size and rate of genetic drift
    e. Recruitment success
        i. To monitor early life history survival and potential constraints

2. Quantify and evaluate spatiotemporal trends in movement and habitat associations of Pallid Sturgeon by life stage, including:
    a. Reproductively active and non-reproductively active adults
        i. To describe differences in and out of reproduction
    b. Juvenile individuals
        i. To describe requirements and potentials prior to sexual maturation
    c. Larvae and age-1 individuals
        i. To describe physical dynamics and processes in early life history
    d. Spawning habitat identification
        i. To describe location, prevalence, and composition
    e. Environmental conditions
        i. To describe utilization, suitability, and availability by life stage

3. Quantify and evaluate spatiotemporal trends in significant aspects of the Missouri River aquatic community, including:
    a. Pallid Sturgeon diet
        i. To describe differences by life stage, focusing on primary ontological shifts
    b. Population status of essential aquatic species (e.g., Sturgeon Chub, Sicklefin Chub)
        i. To monitor abundance and distribution of available forage for Pallid Sturgeon
    c. Existing environmental conditions
        i. To describe constraints on Pallid Sturgeon and the aquatic community
    d. Environmental drivers
        i. To describe potential responses to environmental or management changes
    e. Aquatic Invasive Species
        i. To monitor presence/absence of potential introductions and invasions

The Workgroup would be remiss if we did not include rationale for monitoring and population assessment for Pallid Sturgeon in all defined areas of the Great Plains Management Unit (formerly Recovery Priority Management Areas [RPMA] 1-3); that is, in addition to expressed interest in efforts in the Missouri and Yellowstone rivers between Garrison Dam and Fort Peck Dam (RPMA 2), efforts should also be included for the Missouri River upstream of Fort Peck Dam (RPMA 1) and the Missouri River upstream of Gavins Point Dam (RPMA 3). These populations offer important aspects for Pallid Sturgeon recovery and their dismissal in the development of the Effects Analysis and subsequent SAMP is unwarranted, as summarized below.

RPMA 1

- Size structure, growth rates, and condition of hatchery-reared Pallid Sturgeon in RPMA 1 are at least as good as other reaches
- RPMA1 retains relatively intact riverine characteristics and is the most "natural" reach of the Missouri River in the Great Plains Management Unit and provides population redundancy
- Most of the riparian and shoreline areas in RPMA 1 will not be developed, as it falls within National Wildlife Refuge and National Monument boundaries
- RPMA 1 still has a spring rise, and has the potential for additional flow augmentation from Canyon Ferry and Tiber reservoirs
- RPMA 1 has 40% of the Pallid Sturgeon habitat in Montana
- Many wild Pallid Sturgeon in this reach have not been incorporated into the broodstock program and RPMA 1 is the most upstream extent of Pallid Sturgeon distribution which may provide additional protection from disease and contaminants
- Hatchery-reared Pallid Sturgeon are just starting to reach sexual maturity and the potential for a reproductive population in this reach will greatly increase in the coming years.
- RPMA 1 occurs within the decision-making authority of the U.S. Army Corps of Engineers and geographic distribution of Pallid Sturgeon and therefore should be included in future monitoring efforts

RPMA 3

- Hatchery-reared Pallid Sturgeon in RPMA 3 are relatively young and as they reach maturity, the reproductive potential will greatly increase
- The population of Pallid Sturgeon in RPMA 3 is viable and demonstrates similar or better population dynamics and structure than other reaches of the Missouri River
- Recent research indicates reproduction of the closely-related Shovelnose Sturgeon occurs in RPMA 3
- RPMA 3 has tremendous physical habitat diversity and may be the most similar to the historic Missouri River
- The large, complex delta created by the Niobrara River in RPMA 3 likely provides an ideal interception and rearing habitat for age-0 Pallid Sturgeon
- Reproduction in RPMA 3 not intercepted by the delta or reservoir may contribute to recovery further downstream, as emigration of hatchery-reared Pallid Sturgeon has been documented through Gavins Point Dam
- Maintaining a Pallid Sturgeon population in RPMA 3 improves the long-term recovery potential of the species by providing population redundancy for the Upper Missouri River Basin Pallid Sturgeon population
- RPMA 3 falls within the decision-making authority of the U.S. Army Corps of Engineers and geographic distribution of Pallid Sturgeon and therefore should be included in future monitoring efforts