

# MISSOURI RIVER SPRING RISE

## TECHNICAL WORKING GROUPS

**Federal Building  
1 Federal Drive  
(G-101 –Duluth Dogwood and G-108)  
Ft. Snelling, MN**

**June 8-9<sup>th</sup>, 2005**

### **Meeting Notes**

*Use and Meaning of the Meeting Notes: Plenary and Technical Working Group meeting notes are intended to be a general summary of key issues raised and discussed by participants at meetings. The presentation of issues or items discussed is not designed to be totally comprehensive, or reflect the breadth or depth of discussions. However, it is intended to record the gist of conversations and conclusions.*

*Where a consensus or other agreement was reached, it will be so noted. Where ideas are comments are from only one or several participants, or where a brainstormed list is presented the content of which was not agreed to by all group members, the recorders will to the best of their abilities note these qualifiers. When participants raise comments about the meeting notes, or make other suggestions or comments following meetings which are more than “corrections,” we will add these in a section at the end of the meeting notes captioned “Post Script”.*

### **Day 1- June 8<sup>th</sup>**

#### **Welcome and Introductions**

Robyn Thorson, Regional Director, US Fish and Wildlife Service; Chris Moore and Joe McMahon of the CDR Associates Team welcomed participants and members of the Hydrology and Water Quality and the Pallid Sturgeon/Fish and Wildlife Technical Working Groups.

Members of the Hydrology and Water Quality and Pallid Sturgeon/Fish and Wildlife Working Groups in attendance included: Bill Lay, Bob Bacon, Bob Riehl, Brian Canaday, Bruce Engelhardt, Craig Fleming, Dale Blevins, Darla Helms, David Galat, Don Jorgensen, Doug Latka, Garland Erbele, Gene Zuerlein, Gerald Mestl, Jane Ledwin, Jason Skold, Jeff Shafer, Jim Jennigus, Jim Peterson, Jody Farhat, Joe Gibbs, John Drew, John Shadle, Karen Rouse, Mark Drobish, Mark Rath, Michael Mac, Mike Sauer, Mike Swenson, Mike Wells, Nick Stas, Patrick Cassidy, Paul Danks, Richard Inglis, Robb

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Jacobson, Roger Collins, Roy McAllister, Stan Schwellenbach, Stephen Wilson, Tom Christensen, Tom Graves, Tom Huntley, Tyler Cole, Wayne Nelson-Stastny, Wayne Werkmeister, and William Beacom.

### **Mandates and Goals for the Hydrology and Water Quality Technical Working Group, Pallid Sturgeon/Fish and Wildlife Working Group and US Geological Survey**

Coordinating group members in attendance, Moore and McMahon presented, explained and answered questions about the draft terms of reference prepared by the CDR Team for each of the technical working groups. The draft had previously been reviewed and conditionally approved by Coordinating Committee Members for the Plenary Group. (The Plenary Group may make any additional changes or modifications at its next meeting at the end of June.) (See Attached Terms of Reference for each of the Technical Working Groups.)

### **Background on the need for a Spring Rise Proposal on the Missouri River, Plenary Group mandate to develop a Proposal and roles of Technical Working Groups**

Chris Moore from CDR Associates and Roy McAllister from the COE presented an overview of the Biological Opinion and work the COE has conducted on the Spring Rise. Materials for the presentation were identical to those originally been presented to the Plenary Group at its first meeting.

### **Overview of the Socio-Economic, and Historical, Cultural and Burial Site Working Groups**

The CDR facilitators explained that there were two additional working groups that would begin their work prior to the next Plenary Group meeting and after the Hydrology and Water Quality Technical Working Group has developed some models for SR for the other two groups to respond to.

### **Data inputs on the Pallid Sturgeon from the Pallid Sturgeon/Fish and Wildlife Technical Working Group to the Hydrology and Water Quality Technical Working Group**

The remainder of the afternoon was spent in a question and answer session in which members of the Pallid Sturgeon/Fish and Wildlife Technical Working Group provided input on PS needs and possible impacts of various stages of a SR on its spawning and recruitment.

Below is the brainstormed list of advice.

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**ADVICE FROM BIOLOGISTS TO HYDROLOGISTS**  
**RE:**  
**COMPONENTS OF THE SPRING RISE**  
**AND**  
**IMPACTS ON THE PALLID STURGEON**

**First Spring Rise**

***Start Date***

- ◆ Look at the historic unregulated run of the river to identify when first rises began historically.
- ◆ Look at the natural system, and then look at the virtual system.
- ◆ Biological integrity of regime of the river – Was it sustaining the species?
- ◆ How was flow decided by the USFWS as the determining factor vs. other variants such as temperature, contaminants, water quality, etc.? It is well documented in fisheries science that flows have significant impacts on ecology, habitat and reproduction of species. Therefore, FWS focuses on water quantity vs. quality. (Other agencies handle latter issue.)
- ◆ It should be noted that the PS is an upper river fish that was probably pushed down river by glacial events.
- ◆ One of the possible purposes of the first pulse could be to move reproductive ready PS for wintering areas to spawning areas.
- ◆ PS begin to spawn at about 18 degrees centigrade. On the Mo River, near Gavins Point, this is close to the end of April. The 18 degree number could be accumulated degree days or variation in days (warming or cooling). Temperature could be a major consideration when deciding when the first SR should be initiated.
- ◆ Fish generally go upstream to spawn, and may spawn near Gavins Point/Sioux City. Later, juveniles go down-stream to survive and mature.
- ◆ Another purpose of a SR may be to condition or clean gravel beds which are appropriate for spawning.
- ◆ There does not appear to be a record of larval PS above KC.
- ◆ It may be important to look at photosensitivity, lunar cycles, and turbidity as well as flows to set the date for the first rise.

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- ◆ If ice is on the river, it may not be appropriate to do a SR, because temperatures may not be optimal. On the other hand, ice on the river may help in the scouring or cleaning process of optimal spawning substrate.

### ***Release Rate***

- ◆ We do not know the historical rate of rise.
- ◆ It might be possible to mimic historical stage change, but which rise do you pick and where?
- ◆ River stage rather than cfs is the issue. How do you measure contemporary stage change against historic (velocity and pressure components)? Need to look at discharge changes and compare to stage change. Comparison of stage or discharge will be hard because channels differ from historic times. Need to look at combinations of discharges and stages.
- ◆ Why is the area below Gavins Point Dam seen to be the best PS habitat? (We need to look at the work of the BOR on the Platte and Yellowstone Rivers to get comparative information.)

### ***Size and Patterns of Rise***

- ◆ Historically the higher the delta of the rise, the greater amounts of nutrients that are flushed through the system.
- ◆ There is a need to examine whether the 7/7/7 pattern is the best.
- ◆ Getting the river out of its banks is a critical element of the first rise as it flushes nutrients and creates habitat. (It also results in erosion.)
- ◆ It may not be possible to get the Mo out of its banks except in specific locales, but it may be possible to achieve this on tributaries.
- ◆ What about the depth of water? The rise and recession of water should result in some shallow areas.
- ◆ What about velocity of water? In general, slowing the river down creates better habitat, but this may not be possible in highly channelized areas which always have high velocity. There are two areas where different velocities may be possible – main channel and the sides of the river.

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- ◆ Lands off channel are available that could be flooded to create habitat.
- ◆ Absolute rise or incidental rises are two choices.
- ◆ There is a theory about small pulses. They may be more valuable than one major rise. If the issue is development of eggs, then a long period between rises may be better. Question is whether this is best on main stem or tributaries.
- ◆ Could snowpack on the plains be a trigger or does melt just go into reservoirs? Are all nutrients taken out by reservoirs? Tributaries may produce nutrients even when MO is not.

### ***Stop Protocol for First Rise***

- ◆ There are no major biological reasons to consider not having or stopping a first rise.
- ◆ A possible exception might be in a year in which there are very rapid or reversal of temperature changes or (warming or cooling) that might disrupt gonadal functioning and lead to a bust in spawning.
- ◆ Fish do not reproduce in every year. Need to look at years where adding a rise will have the best chance of enhancing spawning. Don't do a rise in dry years or where it is naturally occurring.
- ◆ Consider doing the Rise during drought years because we do not need to worry about flooding.
- ◆ If you have only one rise, do you do rise #1 or #2? We have no clue but temperature of 18 Degrees C is the important factor.
- ◆ Look at the Reed Study on Larvae.
- ◆ On a warm hot year, take advantage of the first rise. In a cool year, take advantage of second rise.

### ***Stop Protocol for First Rise***

- ◆ Do PS need to spawn every year? A part of the population of PS do spawn each year, but only a part.

### ***Releases between Rises***

- ◆ The drop (historically) depended on where you were; the drop is not always part of the natural flow pattern.
- ◆ Target area is Gavins to Platte confluence.

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- ◆ Biologists don't know if the flat part of the hydrograph helps the PS. The flat part may cause some warming of the River, but it is not known if it helps reproduction.
- ◆ Long term temperature data is limited, but temperature does not seem to be highly variable from year to year.
- ◆ We are working with a highly altered system.
- ◆ We do know that runoff events drop temperature.
- ◆ Fish do not seem to respond to small hydrograph blips – they respond to large changes.
- ◆ Temperature upstream (for 3 days prior) of a point is the dominant factor in temperature.
- ◆ Historic river was wide and shallow, so it was warmer. Now due to changes, the PS may spawn later.
- ◆ Duration – longer seems to be better
- ◆ General comment = “all of issues we are working on regarding biology is extreme conjecture, and we must recognize this”
- ◆ We are producing a starting point that is a hypothesis.
- ◆ Do we have any study subjects, i.e. PS?

### ***Second Pulse***

- ◆ Is there a need for it? What if we used one temperature triggered pulse based on upstream temperature?
- ◆ Pulse #1 may result in hormonal shifts, and pulse #2 for larvae.
- ◆ We see very different fish responses at different locations – location is important.
- ◆ Larvae are not always the scarfalates (sp?).
- ◆ Discharge temperature from Gavins Point dams is relatively the same at top and bottom, because of the shallowness of the reservoir.
- ◆ Both pulses help form PS habitat.

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- ◆ Gavins Point releases will provide data that will be useful at Ft Randall.
- ◆ Shovelnose Sturgeon - seems to spawn on the downside of pulse #2.
- ◆ The mid-flow level of pulse #2 provides (a) connectivity to bank habitat and (b) nutrients.
- ◆ Gavins Point area – no real out of bank flow but farther downstream it exists (re nutrients).
- ◆ A reality – our hydrologic knowledge is quite high and our biologic knowledge is quite low.
- ◆ A solution to lack of knowledge is adaptive management.
- ◆ Because of the above uncertainties, we need to use the historic hydrograph as a reference point.
- ◆ Small temperature changes downstream is due to river inertia.
- ◆ Why Gavins? Why not elsewhere? We should study everywhere and apply learnings to Gavins work area.

***Pulse #2 - End dates for Pulse #2***

- ◆ Need to continue the pulse long enough for fish to aggregate and lay eggs = several weeks.

***Biologists and Monitoring***

- ◆ We (biologists) need hypotheses to test; so we must undertake focused monitoring.
- ◆ Biologists must articulate what needs to be monitored. Can we look at the River to the degree needed to learn? Funding of monitoring.
- ◆ Don't just monitor Gavins Point releases.

**Day II – June 9<sup>th</sup>**

**Background Presentations**

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Presentations were made by Robb Jacobson (USGS) on “Historic Flows and Impacts on Pallid Sturgeon”; and David Galat (USGS) on “What is Known about Pallid Sturgeon Spawning?” Copies of the presentations will be placed on the web site.

### **Separate meetings of each Technical Working Groups**

Each of the working groups met for two-and-a-half hours to:

- Confirmation of understanding of goals
- Identification of Technical Working Group work products
- Identification of specific tasks to be accomplished
- Identification of individuals or groups to accomplish tasks
- Clarification of time line for task completion
- Scheduling future meetings/conference calls
- Discussion of agendas for future meetings/conference calls

See separate meeting notes for the result of each of these meetings.

### **Plenary Session Review of proposed Work of each Technical Working Group and Next Steps**

The meeting concluded with a review of what each group had accomplished, and work that would be done between this session and the next Technical Group Meetings at the end of June. Both groups agreed to try and get information to the Socio-Economic and the Historical/Cultural and Burial Site Technical Working Groups before the next meeting in Bismarck that will include all four Technical Working Groups.

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