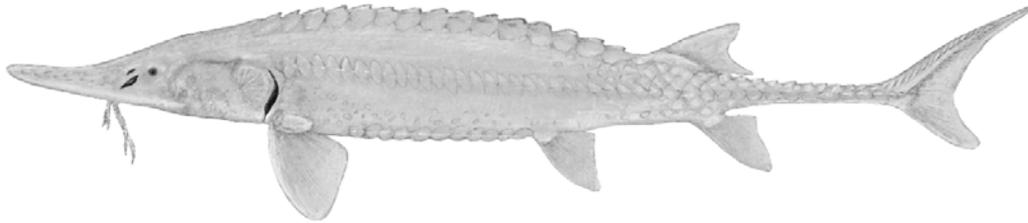


**2003 Upper Basin Pallid Sturgeon Workgroup Annual Meeting  
Dec. 3-4, 2003 – Miles City, Montana**



Meeting Discussion

RPMA 1 - Bill Gardner – Montana FWP

Emphasis of Bill's work in RPMA 1 is currently on the status of the reintroductions done in previous years. The study area is from the mouth of Marias to Ft. Peck Reservoir. 2001 releases do have some fin curling – some are better than others. Only 3 were sampled this year. Fin curling does seem to be an issue related to the facility rather than genetics.

According to Larry Hildebrand, on the Columbia, they are seeing 50% fin curling in hatchery reared fish, but there doesn't seem to be any difference in survival or growth in fish that have been released. There is also some indication that contaminants may be involved in the fin curling/stumps.

In the 2002 fish, 14% had badly curled fins – see notes from BFTC

Re: the stocking of 750 fish in 1998, seems like it is a good number due to the number we are seeing in the recaps, and based on their growth, food/competition may be an issue.

**RPMA 2**

**Kevin Kapacinski (FWP) – Missouri River Sturgeon  
Monitoring**

Only 1 fish was sampled that wasn't from the 2002 or 2003 stocking  
47 adults were sampled in 2003 - 46 were scanned for PIT tags. Of those, 37 were recaps (80.43% recap rate) similar to 2002

Most current estimate of wild adults is 151 +/- 89-236); trend indicates extinction at 2018

Confidence Intervals are getting tighter as the recaps increase, so the adult population estimate is getting tighter.

May be somewhat flawed due to violation of mark-recap assumptions:

- Spatially biased sampling with 6 x 10 nets
- Poor retention and readability of marks
  - Weak batteries may be responsible for some non-reading errors – make sure there are fresh batteries in the pit tag readers

What should we do? Enact a spatially comprehensive netting effort and do a comparison study of 6 x 10 nets vs. 1 x 6 nets

- Double mark adults with
  - Elatomere dye – shouldn't grow over since these are old fish that really aren't growing any more
  - Plastic insert
  - Floy Tags
  - Scute Marking? –
  - DNA markers – Standard procedure with the White Sturgeon folks
  - Bill G. thinks we should put the PIT tags in the shoulder rather than the tail. White sturgeon folks tag behind the head
  - Don't put any pressure on plunger when pit tagging because it cracks the case and causes the tag to not work (Hildebrand)

#### 2003 Additional WAPA-funded study (Kevin)

- 274 drifts made and 201 set lines fished from Oswego (RM 1732) to the confluence at RM 1581.5
- Sampled 25 HRPS at 7 different sites (17 were from 2 sites); 24 were 2001 year-class progeny; 1 was a 2002 year-class progeny (21 were captured in nets, 4 were caught on set lines baited with nightcrawlers). Appears they kind of move and hang out together. Bill G. has found that the pallids are very aggressive, and are usually caught in the first 15-20 minutes, and if you don't catch them right away, you probably won't catch them. Habitat = shallow water, sand bars, islands
- Bill G. suggests that sampling occur in the next 30 miles below the confluence. There could be a similar situation as above Ft. Peck where most of the fish drift downstream.
- Wayne Stancill – anyone who “knows” where the fish are are biasing their samples – needs to be a full, comprehensive sampling regime that covers the available habitats.
- Need to sample the habitats and rehabilitate the habitat closer to the dam (Kevin)
- Able to track growth in 12 of 25
- 5/19 appear to have shed their pit tags (26.32%) after an average of 11 months
- Shovelnose and pallids did not exhibit statistically different weights per given lengths. Ones that are surviving are doing all right.

- Catch rates of Shovelnose sturgeon and Pallid Sturgeon <600 mm did not differ between ¾ inch or 1” inner mesh panels
- 19 fish were at liberty for an average of 328.95 days
- Movement ranged from 1.5 to 71.5 miles (avg. 26.52 miles)
- Distance moved did not differ with Fork Length, Weight, or Time at liberty
- HRPS moved downstream as a group
- Could track movements on 12 of the stocked fish. 8/12 were stocked in the Yellowstone River, most moved upstream into the MO
- Recommendations
  - Shift stocking efforts to upstream sites
  - Measure and weigh all uniquely marked HRPS
  - Release some near the mouth of the Milk, and let them select where they want to be further downstream.
  - Need to address what is the reservoir (Sakawea) – is it death? Is it pretend death? If not death, then we need to trawl in SAK to know what is happening. Last pallid caught in Sak was in 1988, even though netting effort has increased; no recent angler report as well.
  - Do not stock in the Yellowstone River if temps are high and flows are low – data from other studies shows that they don’t like that habitat.

**A recommendation was made by Larry Hildebrand to use nanotags in stocked pallids to monitor downstream egress into the reservoir. Could use the base stations to track.**

### **Wade King – Adult Telemetry Study**

**10 adult pallids have been tagged. Six of the 10 tags still out there. Female 25 lasted 32 months before shedding her tag; the other lasted 19 months before shedding. 2 males shed their tags in the same time line.**

**Five 2001 spawners (4 male, 1 female) were tagged. All have kept their tags for 27 months. The 4 males hung around for several days, but the female disappeared. The female disappeared, but then showed up again above Sak – likely she could have been in the reservoir.**

None were tagged in 2002

In 2003, 12 fish were tagged externally (1 female, 11 males). Desire was for better retention. Therefore, currently have 2 females and 11 males tagged.

None of the 3 females made it into the Yellowstone during the study.

Many of the tagged males have demonstrated movement up the Yellowstone.

Eight of ten 2003 males turned up the Yellowstone and hung out around 6-7 miles up the Yellowstone.

This year, males that previously had moved up the Yellowstone did not, indicating they may not make a “spawning run” every year.

Re: external tags – white sturgeon folks have used these for up to 4 years with no problems. Non-invasive, can be done in 2-3 minutes, and less stressful. Could also enable adding more females to the study. Mounted on the dorsal fin with 150 lb. Steel leader. The tags being used are CART tags.

- Options: 3-year tag vs. smaller 1-year tag
- Fall- capture so you avoid the spawning stressors

Wade would like to capture and externally tag viable female with black eggs, once the broodstock has been collected, to see where they might be spawning.

---

Molly – 90-95% accurate at sexing fish using urine or fluids – USGS in Columbia is working on something liked this. BFTC worked on something like this as well to determine pregnancy status, but also can use it to determine gender. (Stancill is helping him to finish his thesis).

---

Pat Braaten (USGS) and Dave Fuller (MFWP) – Flow Monitoring Studies

- Monitoring water quality, temp, and turbidity – baseline information to compare against when the spillway tests do occur.
- Examined movements by pallids – There was one recent capture of a pallid below Ft. Peck in Nov. 2003. Pallids have been relocated 285 km up the MO below mouth of Milk R. to 68 km up the Yellowstone, and at the headwaters of Sakakawea
- Examining flow and temp-related movements by paddlefish, blue suckers, shovelnose using radio telemetry and 6 base stations – one in the Milk, 5 in the mainstem MO.
- In 2003, there were 1,640 manual relocations (557 blue suckers; 794 shovelnose sturgeon, and 289 paddlefish)  
In Sept, 2003 – an additional 20 shovelnose, 19 blue suckers, and 1 paddlefish were radioed, resulting in a total of 190 radioed fish
- There have been 6 relocations of fish upstream from Intake = 4 shovelnose and 2 blue suckers – indicating that at least a few fish are getting past Intake
- Larval Fish Distribution and Abundance

6 sites were sampled 2 times per week, 2-5 reps per site, 4 sub-samples/rep = 2,052 total samples

Sampled 137 YOY sturgeon with the benthic beam trawl during August and Sept. Mean size = 37 mm (16-124), mostly shovelnose, but possibly some pallids

Also collected 25 HRPS during the study

### Larval drift test 2003

Objectives:

1. Quantify the vertical distribution of larval shovelnose in the water column
2. Determine drift rates of larval shovelnose sturgeon
3. Provide initial considerations for modeling drift rates and larval transport as a function of hydraulic conditions

Value of this: provide basic information on the larval life stage; it appears that there is lack of or minimal recruitment in river reaches fragmented by dams (drift duration is 8-13 days for pallids and shovelnose); estimate general locations of upstream spawning areas (can back calculate based on the age and time of travel); predict the outcome of pallid sturgeon restoration efforts.

Did drift study on a 1,400-meter side channel, 1.5 m deep, 0.48 m/sec avg. velocity, discharge was 1/7<sup>th</sup> that of the mainstem.

40,000 larvae released on first day; second day 30,000 larvae. Sampling stations 100, 500, 900 and 1300 m downstream.

Sturgeon were sampled at all locations on both days

June 25 – 2,144 (5.4%)

June 27 – 1,017 (3.4%)

At 100-m site, most were caught in 2-5 minutes, split between surface and bottom (33%)

At 1300-m site, drift window was max. between 40 and 60 minute, and most were from the bottom (94.5%)

- data suggests that these fish want to be on the bottom. (hatchery guys see fish bobbing from bottom to top in hatchery tanks suggesting they may want to be towards the top, but don't have the energy to hold themselves higher towards the surface.)
- Travel time was equal or slower than mean column velocity on both days.
- Data indicate that drift rate and duration best modeled using near bottom velocities between the 900-m and 1300-m sampling locations.
- Other work (e.g., Gardner, Liebelt) suggests that at up to 4 days, majority of larval fish sampled are near the bottom of the column

- Travel time of larvae was between 0.34-0.37 m/sec when bottom velocity was 0.32 m/sec and mean column velocity was 0.45 m/sec

Piscivore feeding habits study was done in 2001 and 2002 but not in 2003

---

#### Yellowstone River Planned Work – Brad Schmitz

WAPA, BuRec, and FWP will be working together to fund a biologist and crew to work on the lower Yellowstone to staff a biologist and field crew that will be based in Glendive. Half of the position would be dedicated to pallid recovery work. Work will be focused in the Intake area.

---

North Dakota – provided some logistical support, helped fund base station, helped with tagging. Did catch some sturgeon this fall while working on paddlefish.

Put together white paper on the Williston Reach - to address sovereign lands and access issues. From RM 1815 to 1810 is so silted that it isn't a functional channel.

Just bought 400+ acres at Confluence to ensure habitat protection. Owners of 1,000 acres across from confluence have signed agreement to sell to a conservation group.

Issue about downstream of highway 85/upper end of Lake Sakakawea (reservoir head water) and whether it is a dead zone for fish, does it have value? It is not a river anymore or functional river channel – it is pretty well silted in – there is a huge delta at the upper basin.

---

#### **RPMA 3** – Ft. Randall Dam to Lewis and Clark Lake, South Dakota (Wayne Stancill/Rob Klumb)

Have been participating on developing the long-term monitoring program

72 HRPS have been recaptured in 2003 as of November, plus one adult that had been stocked from the hatchery propagation program.

- Gill nets – 24 pallids
- 32 captured in trammel nets
- hoop nets caught 0 pallids
- Beam trawling – 0 pallids
- Set lines – 16 pallids

2 year study – 50% complete. Conclusions: Beam Trawl and hoop nets don't seem to be effective for pallids

It appears that growth of stocked pallids was achieved despite likely poor productivity

Recommend: Need to sample benthos and assess prey availability

---

Re: recaps: average conditions declined -33%  
Average length gain = 45 mm/year = +33%  
Average wt. Gain: 24 g/yr = +45%

### Pallid Bioenergetics Model

Initiated experiments looking at juvenile metabolism and respiration  
Used static respirometry to determine oxygen consumption and therefore metabolism  
19 experiments at 11 different temps.

Need to test larvae and retest larger juveniles  
Extrapolating sturgeon species metabolic rates to pallid sturgeon not warranted  
Need to determine weight and temp. relations with consumption feeding studies  
Need to conduct calorimetry experiments on predator and prey, and determine seasonal changes in energy density.  
Need to describe seasonal temperature regimes in macrohabitats

---

### Army Corps of Engineers

Working on a pallid sturgeon-native fish community standardized sampling protocol.  
Looking at multiple sampling techniques and multiple species using a standardized protocol throughout the range. Other objective is documenting natural reproduction and recruitment of pallid sturgeon. River segments are the priority areas – not the reservoirs  
Attempting to implement this standardized monitoring plan throughout the basin

Providing funds as possible to assist with propagation at all facilities

Gavins  
Blind Pony

Need to have plans in place so the funds can get executed as soon as the green light is given.

Re: the Ft. Peck flow modification plan. This winter should finalize the EA for the mini-test. EA for the full test is still being discussed as to how it might get finalized.

Will be doing spillway netting to prevent and quantify fish losses over the spillway

Working on a larval survival test to determine the consequences if larvae do get down into the Lake Sak delta.

Working with USGS to do larval research in tank experiments

Working with U.S. Army Research Center to measure water velocities at different depths that will be incorporated into detailed models of flow.

Need to determine if they run the spillway, what will it do to the scarhole below the spillway. A private contractor has been hired to determine if there are impacts to spillway if the test flows do happen.

---

### Bureau of Reclamation

Purchased a couple of base stations for telemetry on the Yellowstone

Lower Yellowstone at Intake – committed to passage and reduction of entrainment; engineers have come up with some plans for an Overmeyer weir, but they still need some revisions. It would include a rock fish-way structure that might be constructed this fall

Revising the BA so we can do the rock fish-way right away, but not preclude additional work later

Thinking about operations on the upper MO (Canyon Ferry, Tiber, Sun) to provide money for research that will help answer questions needed for consultation. Started working with Leathe, Guy, and others.

Technical Service Center in Denver put in for funding to do some work on the Milk River (lower) doing telemetry to follow fish

Irrigators have banded together and have a newsletter called the Montana Waterline – see handout

---

### USFWS

Greg Pratschner – USFWS (Program Supervisor in Region 6 – MT, ND, SD)

Lead for MO River issues has been moved from North Dakota (Region 6) and is now in Albuquerque

USFWS has been named in the Blaske Marine case

### Steve Krentz

Sturgeon meeting (see handout) in St. Louis in July 20-22, 2004

Ryan has copy of database (Kevin, Bill, Wayne) that needs to be verified for accuracy pertaining to this years' data

Working on a bibliography of pallid sturgeon literature

Progeny of known parents were sent to SIU to see if they can ID fish back to parents

---

DATABASE –

Existing database needs to be gone through with a fine tooth comb, and the inconsistencies corrected

**Kevin will sit down with Ryan to make corrections to the database.**

**Records of fish stocked need to be made available – through the web.**

**Individual stocking records should be sent to the project leaders from the hatchery managers**

---

## Role and Function of the Workgroup

Each member of the workgroup was asked to describe what they see as the role of the workgroup. Responses are as follows:

UBPS workgroup was established to help protect and recover pallid sturgeon in the upper Missouri River drainage. The group functions to identify pallid sturgeon recovery needs, secure funding, and support research in the recovery effort. The ultimate goal is to work together to ensure recovery of the pallid sturgeon. This effort brings together many disciplines, including fisheries researchers, managers, fish health professionals and fish culturists.

Coordination of activities to determine needs for the species in the recovery areas 1, 2 and 3. Need executive committee to secure as a voting panel.

Outlet for exchanging research and monitoring finds, and directing management activities based on research.

Direct policy/management actions for recovery in areas 1, 2 and 3.

The UBPS Workgroup is charged with restoration of the Upper Basin Missouri River and recovery of the pallid sturgeon. The group works across jurisdictional and administrative boundaries to accomplish site-specific project goals identified in annual work plans. River restoration is defined as a flow regime that follows the natural hydrograph with suitable physical habitats to meet the life stages of the pallid sturgeon. Recovery is defined as de-listing of the pallid – removed from the Endangered Species List and an economic base is established with caviar industry supported.

The role of the workgroup includes several functions relative to the recovery of pallid sturgeon in the upper basin.

- Research: All research on pallid sturgeon in the area is done by members of the work group, and annual meetings provide the means to share information and to determine the direction of future research.
- Consultative: Agencies with possible effects on pallids use the workgroup format to “bounce” ideas around and gain insight into possible fixes to those effects.
- Advocacy: Raise awareness on pallid issues and take stance on issues if necessary.

Mission – Role of UBPS workgroup: Work together to accomplish goals and objectives for recovery of self-sustaining populations of pallid sturgeon and for delisting of pallid sturgeon in the upper basin.

The Upper Basin Pallid Sturgeon Workgroup is a group that works cooperatively throughout the basin to protect and sustain the pallid sturgeon throughout its range, especially in the upper basin.

Protection of remaining pallid sturgeon populations.

Enhancement through stocking of current populations.

- Stocking plan
- Population analysis
- Survival rates
- Stocking
- Growth analysis
- Capture analysis
- Means/types of capture methods

Determine hatchery influence

- Need
- Product

Cause and effect of above

Success is doing it Now!

Minimize duplication of effort.

Share resources such as people and equipment on projects too large for any agency.

Share ideas and experiences

Speak as a professional group on large-scale resource issues that impact or affect

Missouri River restoration efforts.

Provide unbiased scientifically-based information and expertise regarding pallid recovery/status/biology > Agencies, Public, Policy Makers.

Critique scientifically management actions that could impact pallids.

Work as a collective to expand fundamental biological knowledge of the species, and get it published and usable throughout the basin – MT – LA

A work group that focuses on upper basin issues, but does not exclude the remaining range of the species.

Provide information exchange relating to pallid sturgeon biology and status.

Recommend strategies for pallid sturgeon recovery, management, study projects, to resource management agencies.

The role of the UBPLSRWG is to coordinate pallid sturgeon research, monitoring, and recovery activities from interested/participating agencies in SD, ND, MT.

Recovering the pallid sturgeon in the Upper Basin by doing research, field studies, and cooperating with other sturgeon researchers from all over North America.

The role of the UBPSW is to recover pallid sturgeon by prioritizing research and recovery efforts. Research and recovery efforts will be based on good science. Priority will be given to efforts that maximize the most beneficial results for pallid sturgeon recovery.

The UBPS workgroup is a group comprised of state, federal, and private representatives whose goal is recovery of the pallid sturgeon. The group works towards this goal by balancing restoration and recovery efforts with limited funds. Evaluation and coordination of research, establishing stocking guidelines, and monitoring fish health are all tasks of the upper workgroup.

Decision making body tasked to determine the actions that should be taken to most efficiently further pallid sturgeon knowledge for secure pallid sturgeon populations.

Information sharing to bring all facets of pallid recovery together.

Planning to coordinate activities, prevent redundancy and make the best of the resources available (\$ and FTE).

Working cooperatively and using the best available science to develop strategies to recover pallid sturgeon to the point of delisting in the Upper Missouri River Basin.

Determine and enact strategies to recover pallid sturgeon to self-sustaining populations in its native range of the Upper Missouri.

The UBPS workgroup's role is to establish policies and procedures to aid in the recovery of the pallid sturgeon in the upper basin.

A conglomeration of cooperating agencies brought together to recover an endangered species through management and research. This includes management of all waters from all basins.

The primary role of the UBPS workgroup is to direct the research and management activities related to the recovery of a self-sustaining pallid sturgeon population in the upper reaches of the Missouri River basin. This group should be used to facilitate the pooling of information between all parties involved.

The role of the UBPS workgroup is to establish a self-sustaining population of the pallid sturgeon. As part of this process, identify preferred habitat, spawning, movement patterns, forage and something else, of all life stages. Create and conserve all of the above. Maintain the genetic integrity of the species. Create programs for

The Upper Basin Workgroup:

- Coordinates pallid sturgeon research and propagation efforts
- Exchanges information
- Develops funding authorities
- Works towards developing a coordinated position on pallid sturgeon recovery within agency policies, mandates and applicable laws

Promote the pallid sturgeon recovery efforts and what is needed

Act as clearinghouse of membership information, actions taken, recommendations for research, funding, management objectives, stocking quotas for pallid sturgeon program.

Interaction between all cooperators to do field work.

Role: To facilitate the implementation of monitoring programs for free-ranging pallid sturgeon, complete habitat analysis and modifications, promote a successful artificial propagation program producing healthy cultured pallids for re-introduction to the wild. Combine all aspects of the pallid sturgeon recovery plan to achieve a self-sustaining pallid population in the Upper Missouri basin.

To critically review the progress of the pallid sturgeon recovery plan.

To insure best possible human effort put forth to preserve pallid sturgeon and related environment using diverse stakeholders. Encourage Corps to leave some water in the upper basin.

To provide the guidance and direction for the recovery of pallid sturgeon.

To facilitate research and recovery efforts for pallid sturgeon in the upper basin (MT, ND, SD). This includes identification of factors limiting pallid recovery, research priorities, funding sourcing and allocation, manpower allocation. It also provides a forum for efficient transfer and discussion of information amongst all of the various agencies and personnel.

The UBPS Workgroup is trying to save this species. Politics and power-hungry people are doing their best to make sure it disappears.

Implementation of the pallid sturgeon recovery plan in recovery areas 1, 2 and 3. Address biological and environmental limiting factors, political/social issues, and educational/informational needs.

---

Other items discussed and agreed to by the workgroup include:

- There was agreement that the Workgroup should advocate on issues relevant to pallid recovery.
- Need to articulate the role of this group in relation to the federal recovery plan – important to litigation to have a clear role in the recovery process.
  - Potentially develop an MOU between the workgroup and the USFWS
- The Upper Basin Workgroup was established as an advisory group to the agencies that comprise the Workgroup - so our advice is only that
- We as a group don't have the authority to implement recommendations outside of the recovery plan without authorization from the USFWS (e.g., conservation genetics, stocking unmarked fish)
- If we want to do or recommend things that are outside the realm of the recovery plan, then we need to focus on changing the recovery plan
- Jack Williams (WD-AFS) observation: Struggling with 2 issues:

- Relationship with some level of authority – need some document that reinforces the relationship of the workgroup with the USFWS and the recovery plan
- How do you structure the function and decision making role of the group

There was a lengthy discussion about the need for a core voting group or “steering committee” that can vote on and resolve contentious issues. Considerations included representation by agencies in each RPMA or representation by specialty. The group decided that a core voting committee comprised of different specialties (management, fish health, propagation, and habitat) was most acceptable.

Agreement that there should be a core voting group (consensus)

General agreement that core group be represented by different expertise rather than certain areas...(near consensus). Levels of expertise identified include:

- Workgroup Chair – Ken McDonald
- Management
  - RPMA 1 – Bill Gardner
  - RPMA 2 – Kevin Kapacinski
  - RPMA 3 – Wayne Stancill
- Fish Health – Crystal Hudson
- Propagation – Herb Bollig
- Habitat – George Jordan
- Research – Pat Braaten

Mechanism to decide – consensus if possible, otherwise majority (5/8)

Education was another category of expertise that was considered, but since there are no experts in the group with that background, so that category was deleted for now.

With this structure, and the expertise of the Workgroup, it was felt that recommendations from this Workgroup would carry a lot of weight. If recommendations are consistent with the recovery plan, then they should go forward.

A question was asked whether this group was part of the recovery team? The USFWS explained that it is stepped down and aside from the recovery team

### AFS Peer Review

At the March 2003 meeting, the workgroup agreed that it would be beneficial to have an outside, peer review of the workgroup’s procedures, as well as the technical issues the workgroup has been dealing with. Towards that end, the Western Division of the American Fisheries Society was contracted to complete the peer review. WD AFS set up a 3-tierd committee to complete the peer review:

Jack Williams (Southern Oregon University) – one of 3 co-leads on the Peer Review Committee – experience with endangered fishes.

Molly Webb (Oregon State University) – experience with sturgeon

Larry Hildebrand (B.C.) – experience with management and conservation of white sturgeon

Review process, methods, and time table for getting this done:

All are committed to what you folks are doing – and the work being done is tremendously important

There is a group of 23-24 additional folks on the review team that are assisting the 3 co-leads

Work plan was passed out –

Committee was divided into 3 areas of interest

Fish Health (Molly)

Propagation and Genetics (Larry)

Population Ecology and Habitat (Jack)

In addition, the peer reviewers are looking at our process, organizational structure, etc. Not here to address recovery team or plan, but because they affect the workgroup, will look at how these tie into the upper basin

Have completed first phase (info. gathering and data assimilation)

Sent out questionnaire to all of the work group – received about 20 responses

Draft report expected by end of January

WDAFS EXCOMM will review and comment on report

Will then send to us to look at and review and provide comment

Final report by March to workgroup from WDAFS

---

## **Fish Health**

Crystal Hudson – USFWS Fish Health Center

Fish Health assessment discussed per handout

For pre-release assessment, Beth, Crystal, and Jim developed this fish health assessment for pallids. To give a more quantitative process for evaluating fish health

Looked at 3 indicators:

- sensory cells in barbells
- Liver cells – graded three areas in the liver

- Skin – mucous cells and sensory epithelium

Would try to sample 60 fish from each female represented at the hatchery (e.g., Garrison had 3 females, so 180 fish had to be sampled).

Virus was found in Gavins and Garrison; none at Miles City. Saw different results in the same progeny that were represented at all three facilities.

Seeing that fish that have had virus but are now doing fine seem to have an absence of sensory cells even after a year.

Fall fish health assessment did confirm virus at Garrison, none at Miles City (2003 year-class fish)

Are looking at helping managers develop a health condition profile that they could use to monitor the health of their fish through time. Like the Goede-like index. Could also be done on wild fish to give a good baseline by which to compare.

Looking at doing blood analysis in conjunction with MSU and Sea World to be used as part of overall health assessment, or for diagnostic purposes (e.g., stress levels)

Update on PCR test from UC Davis – haven't been able to develop a reliable PCR test, so it is back to the drawing board.

The iridovirus is looking like it may be related to an insect iridovirus, but that is very preliminary information

Still haven't been able to culture the virus, which limits some of our tools for developing solutions. Presence of the virus results the absence of the sensory and mucous cells. Don't know if that affects their survival or if these cells regenerate once in the wild.

One suggestion – collect tissue sample from HRJP pallids recaptured from the wild, to compare with shovelnose or hatchery fish to see how they are doing. Potentially compare it with ongoing diet studies. Crystal has developed guidelines for sampling.

### Jim Peterson

In May, a pre-release assessment was done on hatchery fish.

Assessment was done on 2 adult pallids and 39 shovelnose sturgeon in RPMA 1 to see if we could detect the virus – all negative

July – did assessment on spawners at Miles City – all were negative

Have been using assessment to determine which fish would be used for stocking in RPMA 2

Another pre-release assessment on fish at Miles City

MT Fish Health Committee agreed that HRJPs that originated from eggs that were collected in RPMA 2 and reared in Bozeman could be released in RPMA 1 if they remain clean/virus free

300 sturgeon = 1,000 slides = 20 minutes/slide to analyze

Re: shovelnose that were “positive” a couple of years ago for the virus, those were called positive based on PCR – which now isn’t considered valid. However, the virus did occur later in Miles City State Fish Hatchery, and was confirmed histologically, so it is definitively in the wild in RPMA 2.

Would it be of value to continue collecting shovelnose in RPMA 1 to determine if the virus is in the wild? If we did, the only tool available is histology, but that is not too sensitive.

Re: PCR, what else should we be doing? Answer: Provide monetary support

Crystal will contact Hedrick, find out where we are with the PCR research, and get an idea of what he thinks it will take to develop a test.

**Iridovirus is a pathogen of concern in SD, and therefore is regulated through the import permits. Agrees the health assessment is a valuable tool, and will be used by SD to determine whether fish can be imported into SD, and reminds the USFWS that before importing eggs or fish they must get a state import permit from SD.**

Can’t compare conditions in the hatchery with conditions in the wild, and say since it is in the wild, it is OK to stock virus positive fish...you can’t compare these two scenarios

Herb – the assessment should be done prior to stocking (lab needs 6 weeks) rather than in the winter or further out from the stocking date.

---

## **Propagation**

### Miles City Hatchery

MC July 1 took 224,000 eggs from a female; 86% eye-up, 75% hatch; everything looked good when split into tanks of 5,000 each. Lost one entire lot. Have 5 crosses left = 4,500 fish that can be stocked. Mike kept all of his fish for now, based on the fact that Garrison came up with the bug. Used eggs from 2 females – eggs from a third female went to Bozeman.

Mike’s observations – don’t handle their fish. Only feed and sweep.

Planted 2,186 of 2002-year class fish at Intake, Culbertson, Intake, and Wolfe Pointe  
Lost 2 of the adult females – stress related

Corps money has paid for UV filters, drum filters, and chiller that has greatly improve

5 crosses representing 4,500 individuals (range 300-1,700 per cross), currently at 48 degrees. Need to reduce numbers this spring by stocking some of these fish in order to free up space

#### Bozeman Fish Technology Center

7 lots, 6 of which can go to RPA 1 (3,200 fish), the seventh will go to Gavins for brood 3,200 fish in 6 foot and 4 foot tanks

2 came from Garrison, the rest from Miles City

Weigh and measure 50 fish per month

Do have around (300) 2001 year-class fish that will need to be removed by spring because of space limitations (apr-july)

Working on diet studies associated with fin curl and fatty livers

#### Garrison

Assisted with collection of adults

Collected 3 females and 11 males total, and sent 2 females and 4 males to MC

Recaptured 2 males that had been spawned in 1997 and were re-used

One female that was spawned in 1999 was recaptured and re-used in 2003

Matings were based on genetics work done by U.C. Davis

Spawning went really well

160,000 eggs from 1 female

10,000 eggs from female that were not viable

38,000 from small female, but only a handful survived – they were incorporated into the brood

eggs from 6 lots (3 females) from Miles City were sent to Garrison

4,400 progeny (6 inches) were sent to Gavins. Other were sent to Neosho and RPMA 4

Fall-stocked fish were coded-wire tagged and tagged with a pink elastomer stripe

#### **Need to look into the timing of stocking as it relates to water temperature**

Had a fish that was born in 1992 and had been an aquarium display fish. It died, and when it did it weighed 3.8 pounds, and had viable eggs (14% of the total body weight), indicating that they can produce eggs as soon as 10 years of age.

Currently have 3,700-4,000 fish at Garrison representing 9 family groups – some of these have tested positive for the virus.

Montana has already confirmed that they will not accept any of the 2003 fish from Garrison because of concerns about the clinical virus outbreak in fall 2003

Damage of virus to population of fish being stocked, and the viability of that population because of loss of sensory cells is the key issue (vs. virus positive/negative)

Molly – value to collecting gonad tissue sample and doing histology on every fish sampled – samples should be taken on every fish collected (she will analyze the slides if we can't). Would also be value to collecting plasma sample to monitor sex steroids

### Gavins Point

Involved with pallids since 1991

Received 2002 year class fish from Garrison, reared and tagged them and stocked them in RPAs 2 (1,600), 3 (600), and 4 (1,900), plus 2,000 fish to USGS Columbia lab for research – provided over 8,000 fish weighing 1,000 lbs.

Working with captive future brood stock – currently have 7 year classes totaling 32 families = 1,000 future brood stock. Have been feeding them progressively more live fish as they get bigger. On schedule to produce 600,000 two-inch rainbow trout as forage. Started feeding live fish to 16-month old fish

Rick Barrows has formulated a diet they are using to feed the smaller fish and supplement the live fish.

Working on the propagation sub-committee and updating propagation plan

Facility has been getting crowded, and need an additional building to relieve crowding of these fish. One issue with a new building is whether the water supply should be filtered and UV'ed, or "natural".

Would like to see a fish health assessment during summer to see how they do during a high-growth period.

2003 year class – have about 4,000 available for stocking (came from Garrison)

Haven't done any spawning since 1999, but have been helping Miles City with spawning.

Conservation Genetics is sorely needed in this group...

---

### **Propagation Committee**

A smaller group with expertise in fish health, propagation, and genetics was convened to develop a propagation protocol that will be used to guide propagation efforts in the Upper

Basin. They have been working on the protocol for nearly a year, and have a draft nearly completed (note: a final draft was transmitted to the Workgroup in March 2004).

Contents reflect the knowledge and opinions of fish culturists and fish health experts

Draft to committee in January for their review

Final will be presented to workgroup in March. Will be considered the best available information on the Best Management Practices for Pallid Sturgeon Propagation.

Reviewed research topics and needed areas of investigation – see handout

What about fall collecting? Recommend it be done as an experiment on a limited basis.

---

BA/BO – Casey Kruse

All cases now in Judge Magnuson's court

He wants a federal position before him by May 1 -

Team is working on BA/BO

Expect BO by December 15

Corps will then decide on the Master Manual process

Expect availability of \$42 million by first of January if it becomes available. Program laid out in the BA can't be carried forward if the money doesn't become available

Mini and full test flows out of Peck are in the BA

\$25 million likely to be pumped into pallid sturgeon recovery in the lower basin

of that, \$4-\$5 million to hatcheries

\$2 million for population assessment work

These groups mean a significant amount to the ACOE and their processes

---

### **Stocking Plan**

Need to get the team back together and combine the revised draft and addendum, including genetics

Need to address issues associated with different sizes of fish, as well as clarify the relationship of stocking in RPMA 4 as it relates to the Upper Basin.

Unclear how the stocking guidelines were developed – would be good to know the process that has lead to where we are.

At some point, need to adopt the observed mortality rates.

**Re: development of the stocking plan.....should someone else take the lead in writing the stocking plan...Kevin Kap. Volunteers**

**Stocking plan will include the tagging strategy**

---

**Next Meeting - December 1-2, 2004 in Miles City**

## Upper Basin Pallid Sturgeon Workgroup

March 2004 Meeting

March 3-4, 2004

Yankton, SD

**2003 Annual Reports are due to Ken McDonald (electronic versions in MS Word preferred) by May 30**

Molly Webb discussed reproductive/propagatin issues with the group during an informal question and answer session with the workgroup

The Workgroup then toured the Sturgeon facilities at Gavins Point NFH before resuming the regular agenda.

### **Larval Drift**

Pat Braaten – discussion of larval drift. Results so far...

Increasing tendency to drift near the bottom

Periodicity in drift increases from upstream to downstream

As a whole, larvae drift slower than mean column velocity

### **Kynard et al. Results from 2003 studies**

3 velocity regimes: 17 cm/sec, 21, 30 cm/sec – built in eddies

Dispersal ended on about day 14

Larvae entered eddies, but re-entered the main channel

Dispersal speed slower than channel velocity due to eddies

17 cm/sec – (speed 1-6 cm/sec)

21 cm/sec – (speed 2-6 cm/sec)

30 cm/sec – (speed 6-10 cm/sec)

Swimming height – 0-5 days predominantly in lower 50 cm of water column = 0-84

CTUs (based on water temp. of 17 degrees C)

Day 6-9 – distributed in water column = 101-153 CTUs

Days 10-14 – back in lower 50 cm of water column = 170-240 CTUs

Herb has noted larval fish feeding by about age 14 days

Kynard thinks they begin feeding by about age 6, which correlates with when they move up into the water column???

## **Plans for 2004 Larval Studies**

### Option 1 – Preferred option

Repeat side channel study using pallids and shovelnose sturgeon using age 0, 3, 6, 9, 12 day old larvae; 20,000 individuals per species and age = 200,000 larvae which would require five to ten shovelnose females and 1-2 pallid females.

Would allow direct comparison of both species. Results would be relevant to main channel studies.

Based on the assumption that we can identify any survivors using genetic markers.

Use of these pallids wouldn't count against the stocking quota recommendations for the RPMA – because survival is predicted to be zero – due to high mortality.

### Option 2 –

3-mile long main channel study using shovelnose sturgeon larvae (age 0, 3, 6, 9, 12 days, or maybe only 2, 7, 12 days); 200,000 individuals per age = 1 million larvae = this would require 43-86 female shovelnose

Why? Necessity to expand inferences to the main channel. The ACOE has modeled the 3-mile long main channel site.

Shovelnose will be surrogates for the main channel because it is unlikely that we could produce enough larval pallids for the main channel. 2 minute sampling, bottom and surface, using 3 boats

---

### **Genetics**

Fin clips from 8 progeny from the 2003 year-class were sent to Southern Illinois University to see if they could determine the parental origin of hatchery-reared juveniles.

7 of 8 progeny were identified to the mother, but none could be tracked back to the father (Steve Krentz)

---

### **Zebra Mussels**

Zebra mussel veligers were sampled above and below Gavins Point Dam as part of some zooplankton monitoring that was done in 2003. In one area, 5 were identified, and in another there were 11 identified. This extrapolated out to 20 and 44 total, respectively.

Gavins Point and Montana have developed draft protocols for transporting pallids from Gavins Point while working to ensure veligers aren't unintentionally stocked into uninfected waters. The draft protocol is as follows:

To satisfy import requirements, all suppliers of aquatic animals to be shipped into Montana from areas endemic to the zebra mussel *Dreissena polymorpha* shall follow this protocol prior to the shipment of water and/or aquatic animals to Montana. **Always consider alternatives before importing aquatic animals from areas endemic to zebra mussels. Only when no other reasonable alternatives are available can aquatic animals be considered for import from these areas and the following protocol must be observed.**

**Conditions requiring treatment:**

1. The supplier's hatchery facilities are located within 100 miles of waters containing the zebra mussel;
2. The aquatic animals at the hatchery facilities have been reared in open water supplies (non well water) during one or more life stages;
3. Treatment is required even if no dreissenids have been shown to be present at the facility in question;

**Treatment protocol**

1. Transport fish in clean disinfected distribution trucks, which are known to be free of any potential nuisance species.
2. Prior to loading fish in distribution trucks fish must be treated with 750 mg/L potassium chloride (KCl) (0.63 lb of KCl per 100 gallons of water) for 1 hour in a static bath with aeration.
3. Fish must be transported in well water if possible. If well water is not available water should be pumped through a 20 µm mesh screen. Veligers will be trapped on the screen.
4. Treat fish during transportation with 25 mg/L formalin (9.5 ml or 0.33 fluid oz of 37% formaldehyde per 100 gallons of water) for a minimum of 2 hours.
5. Veligers, the microscopic mussel larval form, may be associated with the fish; therefore, treatment is required even when the fish are transported in well water;
6. After the minimum 2-hour treatment with formaldehyde we recommend that fish be transferred into fresh water. We recommend that this be accomplished by transferring fish from the original distribution truck into another distribution truck containing well water. For instance, in the case of pallid sturgeon coming into Montana from the Gavins Point National Fish Hatchery, South Dakota, we recommend that the fish be transferred from the federal distribution truck into a Montana Fish, Wildlife and Parks distribution truck containing well water after the 2-hour formaldehyde treatment is completed.
7. Transport water may not enter the receiving body of water. Fish must be netted out of transport water into receiving water.
8. Transport water may not be unloaded into any body of water.

This strategy will help prevent the overland dispersal of zebra mussel veligers and protect the receiving waters from infection. This treatment has been shown to be safe for use with walleye *Stizostedion vitreum* and saugeye (sauger *S. canadense* X walleye) (Edwards et al. 2002). The protocol will be evaluated with pallid sturgeon at the Gavin's Point Fish Hatchery to ensure no deleterious effects on the fish.

Reference: Edwards, W.J., L. Babcock-Jackson, and D. A. Culver. Field testing of protocols to prevent the spread of zebra mussels *Dreissena polymorpha* during fish hatchery and aquaculture activities. North American Journal of Aquaculture 64:220-223.

Herb will be trying this treatment over the next year on pallids to see if it works.

Need to step up monitoring for zebra mussels throughout the system.

---

### **Matt Toner – Bozeman Fish Tech. Center**

Report on diet and liver studies being done at the Bozeman FTC:

Energy content related to pallid growth

Factors affecting energy content

Fat content (15% standard) – plus texture, taste, and pellet size

Studied the effect of diets varying from 8 to 26% total fat (8, 14, 20, 26%)

Weight gain increased as fat content increased

Lipid liver score didn't vary much (2.7 – 3.3) as fat in diet increased.

Dietary fat affected weight gain but not fat content in the liver

So far, feeding diets with high fat level will increase growth rate without decreasing liver condition with the rearing conditions used in this study.

Liver condition scores of 4 and 5 are probably not due to energy intake

### **Fin Curling**

Bozeman FTC has fin curling – have done nutrition studies this past year, but by the time it started, they were already seeing the curl. Seems to be a very early problem, possibly even in egg development. That being the case, the nutritional deficiency would need to be addressed immediately.

Are seeing differences between eggs that came from the same parents but were reared in different hatcheries. For example, eggs spawned at Miles City were reared at MC and

Bozeman. Only at Bozeman did they see the fin curling – indicating the cause is facility related vs. genetic.

---

### **MO River Update – Casey Cruse**

The FEIS for the Master Manual and Draft Final AOP and Draft Master Manual are on the streets – Comment period goes through March 19 – Final ROD will be out shortly thereafter.

Current manual contains no commitment to flow changes

Bi-Op contains requirement that the ACOE develop flow plan within next 2.5 years. That will necessitate consideration of all available information.

Mitigation is focusing on creation of shallow water and side channel habitat. Goal is 1,200 acres in 2004, and over 20,000 acres over the course of the next 20 years. Bio-Op calls for reducing 2004 summer flows down to 25,000 kcfs unless 1,200 acres of shallow water habitat are created by July, 2004.

Corps has reprogrammed 22 million dollars from existing projects to pay for mitigation program. Of that, 5.5 million will go towards state and federal fish hatcheries; 11 million will go towards shallow water habitat, and 3 million towards monitoring.

Will fully fund annual support for hatcheries (\$250,000); Won't be able to bring pallid assessment program (standardized monitoring) up to full strength. Maybe next year.

Re: Master Manual – are there any provisions to enable the spring pulse from Ft. Peck on a regular basis. Don't think there is a long-term commitment to spring pulses from Peck.

ACOE, USGS, and USFWS are working together to draw up a new proposal for work – this is a follow-up to the pre-proposal the USGS put forth last year. Need list of folks who can assist with this.

---

### **AFS Peer Review of the Upper Basin Program**

Draft completed – is in internal review stage now, then will go to the WD-AFS for internal review. Then will be sent out to the work group for review. Right now, the review contains 49 recommendations associated with process, propagation, ecology, and fish health.

---

### **Propagation Plan**

Committee was tasked to develop propagation plan in December 2002. Snyder passed out copies of a draft. It was developed collaboratively by the propagation committee.

The Propagation Committee has transmitted the Plan to the Workgroup. The Workgroup core team will review and decide whether to accept or reject. If accepted, we will transmit it to the USFWS from the Workgroup requesting that they adopt and implement it. Will need to address zebra mussels and other ANS issues in the future. Should incorporate protocols for transferring fish from facilities to other states/waters.

Genetic Issues – need to be addressed – either in the Propagation Plan, the Stocking Plan, or as a separate Genetics Plan. Don Campton will be providing comments

---

Molly – try to determine optimal temp. for spawning, which should also be the optimal temperature for incubating the eggs, and visa versa. Could use shovelnose as experiment to attempt this. With white sturgeon, correlated this with temperatures in the wild when and where they thought the wild fish were spawning, then refined that by doing laboratory studies.

---

*Scaphirhynchus* meeting will be in January 10-12 in St. Louis – this is being sponsored by the ACOE – it is the one previously scheduled for July.

AFS is also having a sturgeon symposium as part of their annual meeting in Wisconsin in August.

---

## 2004 WORK PLAN

Discussion re: capacities to raise and rear pallids in 2004-05 based on recommendations in the propagation plan:

Hatchery	No. of juveniles			No. Families (Capacity)
	Fall	Spring	Summer	
Bozeman	16,000	8,000	4,000	4-5 Families
Miles City	6,000	3,000	2,000	6 Families
Garrison	21,000	7,800	3,700	16+ families
Gavins Point	can't do any production in 2004.			
Valley City	unsure – potentially 1,500-1,800 depending on tanks			
RPMA 1	Whatever they spawn will be raised at Bozeman (first priority) as well as other hatcheries			

Stocking Targets - The following are minimum recommended number of HRJ pallids that should be stocked in each of the RPMAs based on the draft stocking plan:

RPMA 1	5,600 yearlings
RPMA 2	9,000 yearlings
RPMA 3	2,000 yearlings

If fish other than yearlings are used, the following conversions will be applied to calculate the stocking numbers:

Four 2-4 inch fish stocked in the fall = 1 yearling

Two fall stocked fingerlings = 1 yearling

One spring-stocked "almost yearlings" = 1 yearling

Pre-release assessments to be done before Fall 2004 so the YOY's can be used if necessary.

Pat Braaten has requested 200,000 larvae for use in the larval drift test. The Workgroup supported this request, as long as all production needs were first met. Production will be the first priority, but if there are extra eggs, they can be used for the larval drift study, pending necessary USFWS and state approvals.

#### Adult Capture Goals (Spring 2004)

Miles City	2 Females x 4 Males = 8 families
Garrison NFH	4 Females x 16 Males = 16 Families
Braaten's Larval Study	2 Females x 2 Males = 4 Families (released as larvae)
RPMA 1	1-2 Females x 2-4 Males = 4 Families

The first adults captured will be transported to Miles City; the location where subsequent adults will be taken thereafter will be dependent on logistics.

In March 2004, the Montana Fish Health Committee agreed to the following:

Pallid Sturgeon from the Miles City SFH, collected as eggs during 2004 or later, will be considered for stocking in Recovery Area No. 1, above Fort Peck, as long as no virus is detected in any production pallid sturgeon at Miles City this year and the pre-release assessments continue to indicate a healthy condition. This is further conditioned that all sturgeon to stocked above Fort Peck must have been reared on 100% filtered and UV treated water, or well water, from the egg to time of stocking.

This means that some of the 2004 year-class production fish from Miles City can be stocked in RPMA 1 if the above conditions are met.

Capture of spawners will occur in the spring, as has been done the past several years. They will continue to be collected in April, soon after ice-off, as has been done in the past. There was discussion about waiting as long as possible (e.g., June) to enable the adults (especially females) to be exposed to spawning temperatures and flows as long as possible. There was uncertainty as to whether the fish would be so spread out, and flows so high that capturing adults would be nearly impossible. Pat Braaten committed to attempting capture of some adults in June primarily as a feasibility test. It was recommended that if the hatcheries are at capacity, he at least collect milt from the males for cryopreservation.

In RPMA 1, capture attempts will begin at the end of may and will continue for three weeks. Bill Gardner anticipates having at least 2 boats there for the 3-week period, and welcomes any additional help. Matt Baxter will assist for 1 week.

Any adult females and necessary males will be held and spawned streamside in the Jones Island area. If extra males are captured, they will be radio-tagged to help direct where netting might be more effective.

Rob Holm will provide a “color-coded” list to each boat showing which fish have been previously used and which can be used in this year’s program. It will show:

- Fish that haven’t been used (and by default, new captures)
- Recaps. Previously spawned but are under-represented
- Recaps that have been spawned but are not represented in the cryopreservation component.

Adults will be taken to and spawned at Miles City and Garrison.

The group also agreed that we could try a limited Fall capture of adults in Fall 2004 if the new building at Gavins Point NFH is completed and on line, and if the logistics can be worked out. Target capture would be 2-3 females x 6-9 males.

To achieve the above stocking targets, as well as provide fry for Pat Braaten’s larval drift work, it is estimated that a total of 8 adult females will need to be captured in PRMA No. 2, in addition to what is captured in RPMA No.1.

Genetic samples (e.g., fin clips) need to be collected from all adults that are captured. Steve Krentz will provide genetic sample kits to all field crews.

Next Meeting: December 1-2 in Miles City, MT

## Upper Basin Pallid Sturgeon



### Recovery Workgroup

P.O. Box 200701  
Helena, MT 59620  
406-444-7409

November 14, 2003

Ms. Robyn Thorson  
Regional Director  
U.S. Fish and Wildlife Service  
Bishop Henry Whipple Federal Building  
1 Federal Drive  
Fort Snelling, MN 55111-4056

Mr. Dale Hall  
Regional Director  
U.S. Fish and Wildlife Service  
Box 1306  
Albuquerque, NM 87103-1306

Dear Ms. Thorson and Mr. Hall:

The Upper Basin Pallid Sturgeon Recovery Workgroup is comprised of more than 40 biologists and resource managers from several state and federal resource management agencies that have jurisdiction for the management and recovery of pallid sturgeon and their habitat in Recovery Priority Management Areas 1, 2 and 3. These include Montana Fish, Wildlife & Parks, North Dakota Game and Fish Department, South Dakota Department of Game, Fish and Parks, U.S. Fish and Wildlife Service, Bureau of Reclamation, and Western Area Power Administration. These biologists and resource managers collectively have the greatest knowledge of pallid sturgeon and their recovery needs in the upper Missouri River basin, and they represent the best available knowledge about the management, conservation, and recovery of pallid sturgeon in the upper Missouri River basin.

The Upper Basin Pallid Sturgeon Recovery Workgroup has, on several occasions over the past ten years, developed a list of recovery priorities for pallid sturgeon. Each time, the number one priority identified by the workgroup has been, and continues to be: **to operate the dams and manage to river to mimic a natural hydrograph.** The best available science, and the nation's leading experts on the Missouri River management

strongly supports the 2000 Bi-Op at a minimum. There is no new information that supports the justification of additional consultation. Pallid sturgeon don't need more studies and they don't need more consultation; they need a high spring flow of warmer water, followed by a reduced summer flow (i.e., like the natural hydrograph used to be), and they need it NOW. This means the river needs to be operated very conservatively to enable the reservoirs to fill above their spillways as soon as possible so there can be a spring rise. This means there needs to be a commitment to implement the spring rise, and there needs to be a commitment to implement the reduced summer flows. There is no more time for delay, unless the intent is to ensure pallid sturgeon go extinct. The purpose of this letter is to strongly urge the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers, through the formal consultation that is being initiated, to immediately commit to and require a flow regime that will enable the spring rise/reduced summer flows as quickly as possible. Contrary to what the Corps of Engineers latest press release indicates, failure to do so will ensure the extinction of pallid sturgeon!

As noted in the Pallid Sturgeon Recovery Plan, the upper basin, specifically Recovery Priority Management Areas (RPMA) 1 and 2 represent the best "stronghold" for genetically unaltered pallid sturgeon throughout their range. Unfortunately, the population of wild, adult pallid sturgeon is estimated at less than 40 in RPMA 1 and less than 160 in RPMA 2. No pallid sturgeon in either area have successfully reproduced for several decades. A recent analysis of tagging data indicates that these populations will be extinct by 2016. Because of their age, they may become reproductively senescent before then. Based on current management of the mainstem river, these populations, the "strongholds", are functionally extinct in the wild.

Current recovery efforts have been focused towards developing a captive propagation program to capture the genetics of the remaining survivors and hopefully prevent total extinction of the species. This is a stop-gap measure, and cannot be relied upon to prevent extinction of the species. Due to disease and other fish health issues, the hatchery program has been less than successful, and we won't know for ten to twenty years whether any of the hatchery-reared pallids that have been stocked will survive to become sexually mature, and if they will successfully reproduce. And without a more natural hydrograph, it is unlikely that hatchery-reared pallid sturgeon will fare any better than the wild pallids. We can't rely on a hatchery program to prevent extinction of pallid sturgeon, much less recover them. They need the flow and habitat characteristics in which they evolved.

The best available science and scientists indicate that pallid sturgeon require a more natural hydrograph, and they require it immediately. There is no additional information

that has become available since the 2000 Biological Opinion was issued that suggests new consultation or a new Biological Opinion is necessary. The Upper Basin Pallid

Page 3

November 14, 2003

Sturgeon Recovery Workgroup urges the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers to immediately modify mainstem river operations to mimic a more natural hydrograph, and to immediately implement the 2000 Biological Opinion before it is too late for pallid sturgeon.

Sincerely,

Kenneth P. McDonald, Chair  
Upper Basin Pallid Sturgeon Recovery Workgroup

cc:

Steve Williams, Director, USFWS  
Dr. Ralph Morganweck, Region 6 Director, USFWS  
Mike LeValley, MRNRC