

**Implementation of the Biological Opinion
St. Louis District – Mississippi Valley Division
Fiscal Year 2001 Progress Report**

Background:

In April 1998, Region 3 of the U.S. Fish and Wildlife Service (FWS) and Mississippi Valley Division (MVD) of the Corps of Engineers entered into formal Section 7 consultation under the Endangered Species Act. The consultation covered the continuation of operation and maintenance activities on the Nine Foot Navigation Channel Upper Mississippi River. Specifically addressed within the consultation were operation and maintenance direct effects, navigation traffic indirect effects, recreation indirect effects, and cumulative effects. The direct effects of operation and maintenance included navigation channel dredging, dike and revetment maintenance, water level management, and management of Corps' lands. A 1998 baseline was established for the effects and a fifty-year evaluation period (to 2048) was used.

Formal consultation was concluded in August 2000, when the MVD Commander sent a letter to the Director of Region 3 FWS setting forth an implementation plan for the Corps project that would accommodate the findings of the FWS's Biological Opinion. The species of concern, covered in the biological opinion, that are germane to the St. Louis District include:

- Decurrent False Aster – Incidental take with no significant Reasonable and Prudent Measures (RPM)
- Bald Eagle – Incidental take with no significant RPM
- Indiana Bat – Incidental take with no significant RPM
- Interior Least Tern – Incidental take with RPM
- Pallid sturgeon – Jeopardy and incidental take with Reasonable and Prudent Alternatives (RPA) and RPM.

FY01 ACTIVITIES

The following is a synopsis of St. Louis District activities for fiscal year 2001. This was the initial year of implementation activities under the Biological Opinion. While we were proceeding with these actions, several items had to be resolved. Items such as verifying basic authorities to carry on this work, securing funding to proceed, coordinating relationships within the District and Division, and coordination with our management partners on the MMR. Some challenges required more effort than others, but to a greater or lesser degree; these challenges were resolved during the initial year allowing us to proceed. Challenges for the coming years still remain. These include fine-tuning of our authorities, compliance with the Federal Advisory Committee Act where applicable, securing and maintaining adequate funding in all of our authorities but especially EMP, and continuing to expand coordination efforts beyond the St. Louis District. Our partners, in particular the states, share some of these same challenges in dealing with funding and manpower constraints. With this in mind, we will closely monitor the burden placed on their agencies as a result of meetings and planning efforts required under this Biological Opinion and will work with them to minimize impacts where possible.

1. **River Resources Action Team (RPA 2 & 4, pallid sturgeon: Term and Condition 4, pallid sturgeon: Term and Condition 4, least tern).** This team was established in fiscal year 2001. The first formal meeting took place in March 2001 and the second meeting took place in June 2001. Prior to these formal meetings, an informal meeting was held in November to discuss pool planning and the Habitat Needs Assessment documents. The first formal meeting was held at the Distance Learning classroom of the Melvin Price Visitor Center. Topics at this meeting included the Biological Opinion, EMP project fact sheets, ranking the fact sheets, Section 514 WRDA99 authority, dredging, updates on current micro-modeling efforts, pool planning efforts, draft Pallid Habitat and Monitoring (Demographics) SOW was discussed and made available for review, bathymetric survey of MMR, woody structure pilot test, SIU-C pallid monitoring effort, flexible dredge pipe test, Thompson Bend reforestation efforts, MMR gravel bar survey, and a general discussion of the status of open river planning and future efforts.

The topics for the second meeting, held on the MMR, included dike and revetment work, dredging, A&M projects, discussion of the MMR Side Channel document, initial planning efforts on the stone dike alterations project, EMP projects and funding levels, woody structure pilot test and future efforts, finishing Santa Fe side channel, chevron construction for next fiscal year, functioning of the RRAT and memorandum of understanding and FACA concerns, pallid habitat and demographics sow, sturgeon fin clip swim study sow, environmental pool management, SIU-C pallid sturgeon monitoring efforts, pallid sturgeon genetics, and fish sampling techniques and results. The next RRAT meeting has been tentatively scheduled for the October-November time frame. Work continues on the proper format of the M.O.U. for the RRAT and it should be brought to resolution in the October – November time frame of the next fiscal year. The M.O.U. is not necessary for the functioning of the RRAT, however, it will provide an understanding of what the RRAT is and does for use in the future.

2. **Pallid Restoration and Conservation Planning Team/Workgroup (RPA 2 & 4, pallid sturgeon).** The team has been named and the concept stated. There is some understandable reluctance on the part of the partner agencies to devote resources and manpower to a planning effort of this magnitude, especially when immediate or near horizon benefits to their respective agencies are not clear at this point (personal and electronic communication). Assuming that this can be overcome, the team will meet in the October time frame to begin framing a Pallid Restoration and Conservation Plan for the MMR. This plan will be available to be used by any agency or entity, not just the Corps. In order to facilitate this planning effort, the team will divide the MMR into smaller reaches and a sub-plan will be produced for each of these. The final plan will assemble all of the sub-plans into one document. The named first echelon reviewers, the pallid expert team, the RRAT, and the Pallid Sturgeon Recovery Team will separately review and comment on completed portions of the plan as well as the final version of the

- plan. The team will have access to all pertinent information on the MMR, to include information as it is derived from ongoing activities. In addition, as other information is made available from the Middle or Lower pallid restoration groups, or by other, yet unseen efforts involving the pallid sturgeon, it will be evaluated by the team and used as appropriate.
3. **Pallid Habitat and Population Demographics and Monitoring SOW (RPA 1, pallid sturgeon).** The SOW is complete and the effort will be initiated in the next fiscal year. Annual results to be used in the pallid restoration and conservation planning process.
 4. **Shovelnose Sturgeon Fin Clip Swim Test (RPA 1, pallid sturgeon).** This study is in progress and should be complete by the end of the fiscal year. This effort was not planned; however, in order to achieve the information that FWS has specified and the Corps expects to obtain through the Pallid Habitat and Population Demographics study, this effort was necessary. The best available method to age pallid sturgeon is through fin clipping; size and weight characteristics are not reliable. The FWS Pallid Sturgeon Recovery Team has issued guidelines that prohibit this and other practices involving stress, harm, or injury to any wild pallid sturgeon. The Recovery Team leader has agreed that if this study shows no deleterious effects on the swimming ability of shovelnose sturgeon that he will recommend to the Recovery Team that this technique be allowed for the Corps' study.
 5. **Emergency Dredging Biological Assessment (Term and Condition 5, pallid sturgeon).** The Tier II Biological Assessment is complete.
 6. **MMR Stone Dike Alteration Plan (RPA 3 & 4, pallid sturgeon, RPM 1 pallid sturgeon: RPM 1, least tern).** St. Louis District began planning efforts on a project currently known as the MMR Stone Dike Alteration Plan. We have "notched" or altered dikes in the past using other authorities with decisions made on a case-by-case basis. This effort differs from the standpoint that the stone dikes for the entire MMR are being considered at one time and a consist system wide plan will result. To date, the concept has been formulated, an initial survey and photo database has been developed for all the dikes within the MMR, and a rough cost estimate has been formulated. The basis of the draft plan is as follows: Nearly 700 stone dikes are located on the Middle Mississippi River between miles 201 and 0 or approximately from Alton to Cairo, Illinois. The goal of this project is to produce a comprehensive plan to include the addition of environmental alterations or features to existing dike fields throughout the Middle Mississippi River. Because of the large extent of the project, the river must be divided into individual reaches and then separate dike fields to be able to design and manage a project of this scope. Therefore, reaches and dike fields will be prioritized to reflect the areas where the need for environmental modifications is most critical. This effort is currently being proposed as an EMP project. This plan will be used in the pallid restoration and conservation planning effort.

7. **MMR Side Channel Vision Document (RPA 2 & 4, pallid sturgeon).** This document considers all of the side channels in the MMR. It details their present condition and the desired future condition. The document, in general terms, considers the tools available to make changes in the current condition and generally addresses which would be appropriately used to stabilize, protect, or improve the ecological functioning of these valuable habitats. The riparian corridor is addressed in general terms and, in areas where direct manipulation is a present or near future possibility, specific actions are stated. This document was prepared by representatives of the Missouri Department of Conservation, Illinois Department of Natural Resources, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers (St. Louis District), and representatives of the USGS LTRM Open River Station. Representatives of river based industry and non-governmental organizations also directly contributed to the document, and as a result, partnerships for direct action have formed and continue to thrive. This document, which will serve as the block on which to build the pallid restoration and conservation plan, was published in the Avoid and Minimize Annual Report for 2000. This document has been used to develop possible projects for Avoid and Minimize, EMP, and Section 514 authorities and has been used in the development of the Rivers Project Master Plan and the Draft Mark Twain National Wildlife Refuge Complex Comprehensive Conservation Plan.

8. **Flexible Dredge Pipe Test (RPM 2, pallid sturgeon: RPM 2, least tern).** ERDC (WES) in conjunction with New Orleans District planned a 5 – 8 day demonstration project at the Head of Passes with a dustpan dredge between 21 May and 15 June 2001. While this technology had been developed and proposed in 1998-1999, it has never been tested under real world conditions. Under this test, the dredge would attempt to operate in a typical riverine dustpan dredge manner while discharging through floating hoses and submerged pipe. This test or demonstration will give insight as to the feasibility and efficiency of using dustpans to place material in a central location (island creation, sandbar augmentation, island tips, etc.). The test was set up and ready to go; however, it had to be stopped due to an extreme shortage of O&M funding. The test has been rescheduled for FY02 with WES monitoring and evaluating and New Orleans District, in partnership with the state of Louisiana, accomplishing the actual work. Successful conclusion of this test is critical to St. Louis District's decision to proceed or not proceed with this technology and the investment in flexible dredge pipe for the Dredge Potter. The results of this test and analysis by the St. Louis District Dredging Project Manager will be used in the pallid restoration and conservation planning process.

9. **MMR Gravel Bar Survey (RPA 2, pallid sturgeon: Term and Condition 3, pallid sturgeon).** This effort is designed to begin to quantify the amount of gravel that exists in the MMR and to begin to establish spatial relationships of gravel bars to on-going sturgeon tracking and sampling efforts. This effort is part of our analysis of available potential spawning habitat for pallid sturgeon. The initial

effort was accomplished through a helicopter survey with limited ground truthing. From these efforts, the first set of maps was produced. In addition, another set of maps was produced that located pallid sturgeon telemetry “sightings” with known gravel bars. This effort will be continued in the next fiscal year, with additional aerial surveys (if necessary), ground truthing, and refinement of the maps. The next years’ effort is dependant on low water levels in the MMR; high water levels will preclude this effort. The information and maps to be used in pallid restoration and conservation planning effort.

10. **Boltonia decurrens Inventory and Assessment (Conservation**

Recommendation 1, B. decurrens). A comprehensive inventory of Boltonia decurrens was conducted as a cooperative effort between the St. Louis and Rock Island Districts. The inventory was conducted in the September and October of 2000 by Dr. Marian Smith, of SIU-Edwardsville and published on 31 December 2001. Fifteen sites were surveyed, 13 had B. decurrens. Eight new sites were found, 5 sites were located in areas previously recorded, and 2 sites had no B. decurrens. The results of the inventory are very encouraging, with good population numbers reported throughout its range. Per the report, sufficient knowledge of the basic biology and ecology of the plant now exists to understand habitat requirements and to promote population survival. Due to the fugitive nature of the plant and the fluctuation of habitat (relies upon regular disturbance), stabile populations of B. decurrens do not exist. However, where suitable habitat is available, either through natural causes such as flood or drought or man made through soil manipulation, the plant will readily invade these areas and sustain itself.

The St. Louis District is conducting an additional population survey during September of 2001. The Contractor will survey a minimum of 5 sites in Missouri and 20 sites in Illinois. Emphasis will be placed on historic sites in Henry, LaSalle, Logan and Menard counties, which have not been surveyed in over forty years. In addition, floodplain counties along the Illinois River above the published range for the species will also be surveyed.

Populations of *Boltonia decurrens* in Illinois: site name, county and size.

Site	County	1995	1996	1997	1998	1999	2000
Anderson Lake	Fulton	250	44	23	15	426	744
Banner Marsh	Fulton	--	40	--	12	--	5
Beardstown	Cass	0	50	8	15	250	15
Billsbach Lake	Putnam	--	1	0	--	--	200
Blaylock Cr.	Tazewell	--	--	--	--	--	380
Browning	Schuyler	20	200	--	--	50,000	100,000
Chatauqua Refuge	Mason	--	--	500	--	--	17
Cooper Park N	Tazewell	35	35	195	9	32	5(1200*)
Detweiler Wds	Peoria	--	--	12	26	11	0

Fairmont City	St. Clair	0	--	3000	25	175	200
Ferry Lake		--	--	--	--	--	300
Frederick	Schuyler	15,000	50	2000	10	150	500
Gilbert Lake	Jersey	5000	1000	2500	1300	1500	3500
Glades	Madison	--	--	--	--	--	1
Goose L.	Marshall	--	--	--	--	--	1000
Havana	Mason	50	30	50	--	150	--
Hennepin Br.	Bureau	--	0	8500	1200	4500	320
Horseshoe L.	Madison	450,000	50,000	100,000	1000	900	200,000
McClugage	Peoria	6,000	340	5000	750	700	1200
Meredosia L.	Morgan	6000	400	1000	750	890	1300
N. Meadow L.	Marshall	--	--	--	1000	--	--
Rice Lake	Fulton	20,000	30,000	500,000	10,000	500,000	970,000
Rte 203	Madison	--	--	--	--	--	50
Sanganois	Fulton	0	1	--	--	--	500,000
Sawyer Slough	Marshall	--	--	38	29	--	--
Senachwine L.	Putnam	--	5	4	59	--	1
Smith Lake	Scott	100	25	5	0	0	0
Sparland SCA	Marshall	--	0	--	1000	50	25
Spring Bay F.	Woodford	--	--	0	4	29	**
Woodford CA	Woodford	50,000	100	100	165	3120	700
Worley Lake	Tazewell	--	10,000	100,000	100,000	500,000	100,000

-- Indicates that population numbers are not available for the site on this date

*This increase is due to the location of a new population North of the previously established population

**Area was flooded, but several plants could be seen at a distance

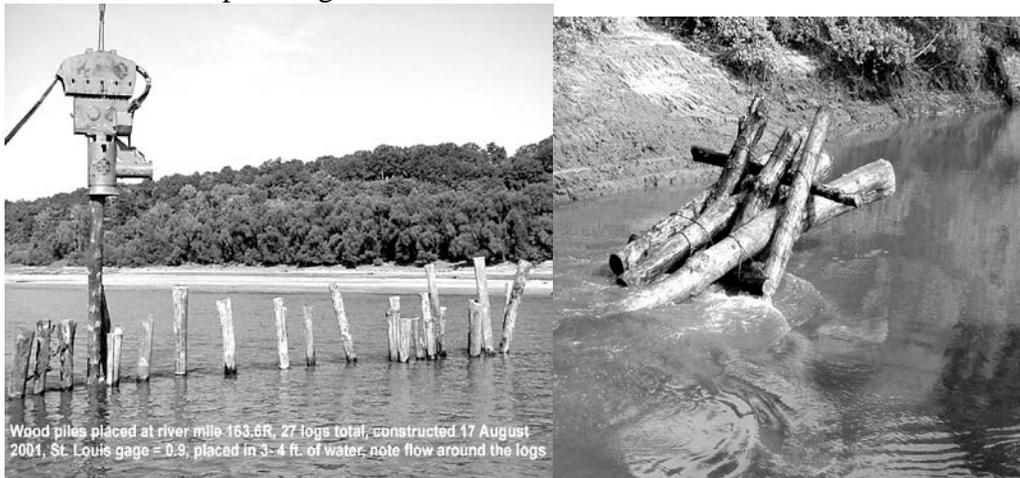
Population numbers for 1995 and 1996 were compiled by John Schwegman and Marian Smith; numbers for 1997-2000 were compiled by Anne Mankowski, Michelle Simone, Todd Bitner, Paige Mettler and Marian Smith

11. MMR Pallid Sturgeon Habitat Use Project (RPA 1 & 2, pallid sturgeon). This is an ongoing study that began in 1995. The SIU-C Cooperative Fisheries Research Laboratory is conducting the fieldwork and analysis. The goal of the study is to monitor the relationship between river training structures and the pallid sturgeon. The study uses radio telemetry tracking to follow implanted pallid sturgeons and over the life of the study a total of 195 relocations of the study fish have been made. Most of the tracking effort has been made between RM 81 and RM 151, in order to maximize relocations. In general, the results of this study indicate that pallid sturgeon may have a preference for the type of habitats and conditions created along the main channel boarder, downstream of island tips, between wing dams, and wing dam tips. In addition, fifty-five substrate samples taken at points where sturgeon were relocated indicate that the fish were most commonly found over sand (81%), and occasionally over sand/gravel (9%) and mud/silt (5.5%). A detailed discussion of this effort is contained in the A&M

Progress Report for 2000. The data and results of this study will be used in the pallid restoration and conservation planning effort.

12. **Bathymetry of the MMR (Term and Condition 3, pallid sturgeon: Term and Condition 3, least tern).** In order to produce the habitat map referred to in the discussion concerning habitat loss in the incidental take statements for least tern and pallid sturgeon, a complete bathymetry of the MMR had to be accomplished as the first step. The survey began at mile 0.0 and went to mile 200.0. The area surveyed extended bank to bank and included the side channels and chutes. This effort was completed in July 2001 and data reduced in August 2001. The data for the entire MMR have been made available to LTRMP for inclusion into their database. These data are also being used to study the possible effects of changing the water control master manual for the Missouri River flows on the MMR and in particular, effects on the RPAs and RPMs for pallid sturgeon contained in the FWS Biological Opinion for the Upper Mississippi River. The majority of the bathymetry was collected on 200' transects with selected high priority side channels and reaches being collected with multibeam survey equipment. The habitat map will be produced next FY and will be updated on a five year schedule. In this way, we expect to track changes in the habitat that otherwise are too small and too temporary in nature to evaluate on an annual basis. Bathymetry and habitat maps will be used in the pallid restoration and conservation planning process.
13. **Schenimann Chute (RPA 4, pallid sturgeon).** This project was taken from the MMR Side Channel Vision document, modified to eliminate the riparian corridor actions and focused all efforts on the aquatic portion of the plan. This modified project was included in the fiscal year 2001 EMP effort for St. Louis District as a small fast track project. Design and engineering have been completed and plans and specifications are ready for advertisement. It was expected that the contract would be advertised and awarded at the end of the current fiscal year (2001), however, lack of EMP funds has placed this side channel project on hold. The plans and specifications have been shelved, but they can be prepared for advertisements and award with little effort or advance time notification. It is anticipated that St. Louis District will have sufficient funds to advertise, award and begin construction within the next two to five years. Monitoring data on this site will be used in the pallid restoration and conservation planning process.
14. **Woody Structure in the MMR (RPA 4, pallid sturgeon).** During July and August of 2001, the St. Louis District placed wood structures at three locations in the Middle Mississippi River. Twelve log bundles were placed in Calico Chute (R.M. 148.3- 147.3). These bundles, comprising 80-100 logs total, were placed at four locations within the chute. Fifteen log bundles (over 100 logs) were placed at two locations along the main channel border between R.M. 165.5 and 165.0. Over 50 logs were driven into the substrate to create modified pile dikes at two sites between R.M. 165.0 and 163.5. All placement sites were coordinated with

the USFWS. The wood structures are expected to increase habitat diversity by providing attachment sites for aquatic invertebrates in areas of otherwise unstable substrates. The structures are also expected to benefit fish species directly through the creation of cover, reproduction, and forage sites, through the increase in localized habitat types created by changes in the river bottom and flow patterns caused by the structures, and through the collection and deposition of organic debris, like leaves and drifting wood, which in turn will be utilized by both aquatic invertebrates and young fishes. Pre-monitoring of the sites has been completed and post monitoring will be carried out to determine the effects of this effort. Monitoring data on these sites will be used in the pallid restoration and conservation planning effort.



15. **Incorporation of Woody Debris in Dikes (RPA 4 and RPM 1, pallid sturgeon):** The St. Louis District has modified the Dike and Revetment construction contract for the Chester reach (RM 103 – 120) to include placement of driftwood into selected dikes. Per previous coordination with IDNR, MDC, and FWS personnel, the wood will be placed in random order and alignment in order to gain the greatest benefit. This contract has been awarded, work is proceeding and should be completed next fiscal year. It is expected that by incorporating woody debris into the rock structures an increase in invertebrate diversity and biomass will occur. This effect may be short lived and may decline as the debris deteriorates. Where debris is incorporated, the structures will be monitored to determine the effects. These dikes will be monitored to determine effects and this information will be used in the pallid restoration and conservation planning effort.

16. **Incorporation of Notches in Dikes (RPA 4 and RPM 1, pallid sturgeon):** The St. Louis District has modified the Dike and Revetment construction contract for the Chester reach (RM 103 – 120) to include placement of strategically placed notches in selected dikes. The locations, size and invert of the notches were coordinated with representatives of MDC, IDNR, and FWS. This contract has been awarded, work is proceeding and should be completed next fiscal year. It is expected that these notches will maintain and enhance flow in the side channels

thereby increasing the habitat value of these areas through increased duration of connectivity to the channel and development of scour holes. Where the dikes are notched, the structures will be monitored to determine the effects. The monitoring information will be used in the pallid restoration and conservation planning effort.

In addition to the above, the PM and the lead biologist attended a meeting of the middle basin pallid sturgeon recovery work group in Columbia, Missouri. The PM attended the lower basin pallid recovery work group meeting in Vicksburg, Mississippi. Information on recovery efforts, identification techniques and genetics was shared at these meetings. Some of this information is pertinent to the effort on the MMR and will be considered during the pallid restoration and conservation planning effort.

PROJECTED FY 02 EFFORTS

As always, this section must carry the “depending upon availability of funds and appropriate authorities and partners” caveat. Based on current projection of FY02 funding of all applicable authorities in the St. Louis District, we anticipate proceeding with the following work. Not all of these items will be completed in the next FY as some of them are multi-year continuing efforts and others may require extensive outside coordination.

- a. The Pallid Sturgeon Habitat and Population Demographics study will be initiated and monitored for progress and quality control. (3 year effort)
- b. The pallid restoration and conservation planning effort will be geared to producing the first reach plans while continuing to advance the total planning effort in cooperation with states and Service. (To be complete in FY05)
- c. Coordinate with the FWS Pallid Recovery Team on fin clip swim test, pallid recovery and conservation planning efforts, and other issues as they arise.
- d. Continue coordination with the RRAT and formalize MOU by end of first quarter. (Continuing effort)
- e. Continue consultation on the emergency dredging issue.
- f. Produce MMR habitat map.
- g. Prepare pallid stocking feasibility report.
- h. Update and continue the MMR gravel bar survey effort.
- i. Monitor pilot efforts. Where possible, combine efforts with states and open river field station. (Continuing effort)
- j. Initiate E&D and micro-modeling activities for FY03 or FY04 pilot project(s)
- k. Pilot Projects – complete Chester reach contract that contains addition of woody debris to the dikes and strategic notching of dikes. Continue the woody structure pilot effort. Build chevron in MMR as agreed to in June RRAT meeting. Modify tip of Ellis Island for least tern (regulatory permits already secured, EA prepared and has been circulated for comment, challenge cost share partner obtained, and currently working on formalized cost share agreement).
- l. Initiate terrestrial inventory for lands managed by the Corps in the MMR – inventory to be made available to pallid restoration and conservation planning effort.
- m. Complete annual *Boltonia decurrens* inventory and finalize management plan
- n. Continue to develop the MMR Stone Dike Alteration Plan. (Multi year effort)
- o. Continue Pallid Sturgeon Habitat Use Project with SIU-C Cooperative Fisheries Research Laboratory. (Multi year effort)