

Implementation of the Biological Opinion

Annual Progress Report September 2004

U.S. Army Corps of
Engineers
St. Louis District



**Implementation of the Biological Opinion
St. Louis District – Mississippi Valley Division
Fiscal Year 2004 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 Upper Mississippi River Nine Foot Navigation Channel. 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.

FY04 ACTIVITIES

The following is a synopsis of St. Louis District activities for fiscal year 2004. This was the fourth year of implementation activities under the Biological Opinion. Many of the activities undertaken are beginning to reflect a degree of maturity in the overall effort, and attention is gradually shifting to coordinated long range goals. Some activities, however, still lack the desired maturity of effort and we continue to work on improvements. For the immediate future, funding and manpower requirements will continue to be addressed on a year by year basis. Our partners, in particular the states, have voiced similar concerns with regard funding and manpower constraints. With this in mind, we will continue to 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 -- Executive Team (RPA 2 & 4, pallid sturgeon: Term and Condition 4, pallid sturgeon: Term and Condition 4, least tern).** The River Resources Action Team met in a scheduled formal Executive Session in November and in an unscheduled Executive Session in June of this fiscal year. Topics for the formal session included a quick overview of FY03 Corps activities, beneficial use of dredge material, higginsii re-stocking efforts effecting St. Louis District, EMP fact sheet ranking and status of projects, the Navigation Study, status of PAS Project for Pool 25 with Missouri, and a self critique. The Exec expressed their satisfaction with Dike and Revetment and Regulating Works coordination and continued to press for improvement in dredging coordination. Results of the self critique were generally favorable, however, the Exec expressed a desire to change the name of the RRAT Tech to better differentiate it from the Exec. Topics for the unscheduled session revolved around pool plans and IDNR and Corps reorganization efforts. The next RRAT Executive Team meeting will be held in November, 2004.
- 2. River Resources Action Team – Technical Team (RPA 2 & 4, pallid sturgeon: Term and Condition 4, pallid sturgeon: Term and Condition 4, least tern).** The Technical Team met three times during the fiscal year, during October, March and June. The October meeting focused on EMP fact sheet ranking. The results of this effort were given to the RRAT Exec for their review and approval. Also, a prioritization of proposed Corps environmental work on the river was finalized for FY04. This list assists the Corps in programming available funds for both planning and direct action efforts.

The March meeting was held at the Distance Learning Classroom at the Great Rivers Museum. In this meeting, each agency updated the RRAT on their management/research activities and updates on planning efforts as well as agency news. In addition, the following topics were discussed: EMP projects status, CAP projects status and status of section 1135 and 206 funding and authorization, COE reorganization, pool plans, dredging activities, Regulating Works and Dike and Revetment O&M activities, A&M activities and goals for the year, goals of environmental pool regulation for the year, and updates on implementation activities to include the pallid habitat and demographics study and pallid restoration and conservation planning effort. Also discussed were O&M funding and EMP funding prospects for the current and next fiscal years. In addition, the UMR-IWW Navigation Study was discussed and current updates were shared. A direction of LTRM and the products produced was also discussed.

The topics for the June meeting, held on the Upper Mississippi River, included a discussion of dredging and the pilot projects for thalweg disposal and modification of dredge disposal to create ephemeral islands in a selected area. Dredging discussion also included ways to improve coordination; mid-year update on implementation of the Biological Opinion to include a synopsis of current FY04 work, proposed FY05 work, update on the pallid conference, and a general update on the pallid study and planning efforts; detailed discussions of the

Pallid Habitat and Demographic study efforts were given by MDOC and SIU-C; American Lands Conservancy gave an update on their present and immediate future activities; RIAC gave an update on their current structure and status of ongoing efforts; A&M update current and proposed future activities; current and future O&M Dike and Revetment and Regulating Works activities; Iowa Island – Bolter’s Bar effort was discussed; COE-MDOC Comparison study; UMR Navigation Study update and ecosystem restoration and mitigation; discussion of Lower Mississippi River Environmental Planning; EMP update; current and future micro-model study efforts, updates given by each agency; and a list of proposed projects (FY04 and beyond) was presented for initial prioritization by the RRAT.

3. *Boltonia decurrens* Inventory and Assessment (Conservation Recommendation 1, *B. decurrens*).

A comprehensive *Boltonia decurrens* survey was conducted in 2000, 2001, and 2002. A report prepared by Drs. Marian Smith, Paige Mettler-Cherry and Thomas Keevin that details the results of the 3-year survey has been completed. Based on the "Decurrent False Aster (*Boltonia decurrens*) Recovery Plan" approved on September 28, 1990, *B. decurrens* was historically known to occur on the Illinois River floodplain in 11 counties along the Illinois River Valley (from North to South: LaSalle, Marshall, Peoria, Woodford, Tazwell, Fulton, Mason, Schuyler, Cass, Morgan, and Calhoun counties) and in St. Clair County on the Mississippi River floodplain. It also occurred on the Mississippi River floodplain in three Missouri counties near the confluence of the Illinois and Mississippi rivers: Lincoln, St. Charles, and St. Louis counties. During the present survey, *B. decurrens* was found to be extant in 14 counties (LaSalle, Bureau, Putnam, Marshall, Peoria, Woodford, Tazewell, Fulton, Mason, Schuyler, Cass, Morgan, Scott, and Jersey) along the Illinois River and two counties (Madison and St. Clair) along the Mississippi River. In Missouri, it was found in only one of the three historically known counties, St. Charles County.

A comprehensive survey of herbarium collections is currently being conducted by Drs. Keevin, Marian Smith, and Paige Mettler-Cherry, to better determine the historic range and habitat of *Boltonia decurrens*. Only limited surveys of herbarium collections were conducted prior to preparation of the Recovery Plan. One interesting early (study still in progress) result of the study is the determination of *B. decurrens* “hot spots” where the species has persisted for long periods (54 – 114 years) based on herbaria collections and recent collections. For example:

Peoria County (Peoria Area): 1890, 1900, 1903, 1904, 1947, 2000, present
Fulton County (Havana Area): 1910, 1939, 1950, present
St. Clair County (Indian Lake): 1893, 1897, present
Woodford County (Spring Bay): 1950, 1995, present
LaSalle County 1931, 1932, 1966, present

These studies will be published and forwarded under separate cover.

4. Pallid Restoration and Conservation Planning Team/Workgroup (RPA 2 & 4, pallid sturgeon).

The Pallid Restoration and Conservation Planning workgroup and initial peer review group has been formed. This effort was originally scheduled for completion in FY05, but current plans for completion would extend this deadline to FY06 in order to gain maximum benefit from the Habitat and Demographics Study and the pilot project monitoring information, as well as permitting additional opportunity for increased technical review. The request for extension has been coordinated with and approved by FWS and MVD. The planning team will meet early in FY05 and begin evaluating all relevant information and lay out a detailed outline. Ongoing or recently completed study, inventory or research efforts which will directly advance the plan include the habitat and demographics study, pilot projects and monitoring of those projects, ongoing data collection by Open River Field Station, level II inventory data as it relates to riverbank and riparian zone, gravel bar survey efforts, Middle Mississippi side channel analysis, creel census data, commercial harvest data, micro-model results, historical geomorphological mapping of the MMR and Middle Mississippi River Historic Island Survey . Completed or on-going planning documents which directly advance this plan include the side channel vision document, stone dike alteration study/plan for the MMR, Pallid Stocking Feasibility Report, MMR habitat map, and side channel connectivity at various hydrographs for the MMR.

5. Pallid Habitat and Population Demographics Study (RPA 1, pallid sturgeon). Field Sampling

Planning meetings were held 17 May 04 in St. Louis and 6 Aug 04 in Vicksburg to discuss and agree upon sampling strategy and data analysis. SIU and MDC continued to sample randomly selected locations to evaluate habitat preference, while ERDC sampled targeted locations to maximize catch of pallid sturgeon. SIU sampled UMR miles 100-200, MDC sampled UMR miles 0-99, and CEWES sampled throughout the 200 miles of the Middle Mississippi River (MMR). Sampling gears included hobbled gill nets, 2 and 3-inch bar mesh gill nets, experimental mesh gill nets, hoop nets, 8 ft Missouri benthic trawl, 16 ft Missouri benthic trawl, 25 ft benthic trawl, trotlines, and drift nets. Trotlines were not used during the summer because of low catches, and gill netting was minimized. Greater effort was expended on trawling, but sampling locations continued to be randomly selected. All gears will be used during the remaining seasons.

Relative Abundance

A total of 91 pallid sturgeon have been captured, tagged, and released over a 2.5-year sampling period in the Middle Mississippi River (see Excel Spreadsheet). However, 2 of these fish were recaptured, reducing the total number to 89 pallid sturgeon. A total of 6,189 shovelnose sturgeon were captured resulting in a ratio of pallid to shovelnose sturgeon of 1:70 in the MMR. Total effort for all gears (gill nets, trawls, trotlines) and agencies (MDC, SIU-C, and CEWES) combined

was 37,192 hours, which is equivalent to 1,550 days of sampling (Table 1). These numbers do not include larval *Scaphirhynchus* spp. that were captured in the Missouri trawls by MDC. Identification is pending on these specimens.

Telemetry

Since February 2002, SIU personnel have tracked 1,834 miles total in the 200-mile stretch of the Middle Mississippi River, with 438 miles of this total (24%) being tracked during October 2003 through July 2004. Twenty-four pallid sturgeon were tagged with ultrasonic tags since October 2003. Twenty-nine relocations have occurred since October 2003. To supplement manual tracking, sixteen stationary ultrasonic receivers were successfully deployed throughout the Middle Mississippi River during spring 2004. These units have successfully detected tagged sturgeon. Additional receivers have been purchased and will be deployed in Nov 2004 including tributary mouths. Summarizing the tracking results to date, the longest movement recorded by a pallid sturgeon was 200 miles compared to 69 miles for a shovelnose sturgeon. Both species seem to migrate upstream in early spring, and large numbers of each species were captured below the lowhead dam at Chain of Rocks. Adult pallid sturgeon seem to use areas of low flow in open water habitats, while juvenile shovelnose sturgeon use very low flow areas at the downstream end of island tips.

Other Studies

A SIU graduate student (Rob Colombo) recently finished a master's thesis in which he sexed 308 shovelnose sturgeon sampled in the Middle Mississippi River to develop a guide to reproductive development. He demonstrated that gonads can be rapidly inspected to determine sex and stage of development for *Scaphirhynchus*. Genetics study being conducted at SIU indicated that assignment testing with multiple microsatellite loci can provide genetic-based discrimination of pallid and shovelnose sturgeons at all life-history stages. They expect this methodology to be useful for several aspects of pallid sturgeon recovery including the selection of pallid sturgeon broodstock and the identification of pallid sturgeon larvae in field samples.

***Scaphirhynchus* Conference**

At least 8 presentations will be made at the upcoming conference in January 2005 that are directly or tangentially related to the St. Louis Corps-funded study. Presentations will include information on diet, age and growth, abundance, movement patterns, habitat preference, genetics, morphometrics/identification, and harvest issues.

Table 1. Total sturgeon sampling effort in the Middle Mississippi River from May 2002 through Summer 2004 by Missouri Department of Conservation, Southern Illinois University-Carbondale, and Corps of Engineers Waterways Experiment Station. Gillnet effort does not include pallid sturgeon captured by commercial fishermen (SIU) or any recaptured fish.

Stats by Gear	MDC	SIU	CEWES	Total
GILLNETS				
Sample Number	981	589	6	1,576
Hours Fished ¹	14,554	8,218	96	22,868
Number of Shovelnose	2,036	1,713	8	3,757
Number of Pallids	12	13	0	25
TRAWLS				
Sample Number	758	263	3	1,024
Hours Fished	51.4	12.3	0.5	64.2
Number of Shovelnose	544	47	3	594
Number of Pallids	3	0	0	3
TROT LINES				
Sample Number	387	88	256	731
Hours Fished	8,316	1,848	4,096	14,260
Number of Shovelnose	300	29	1,509	1,838
Number of Pallids	11	1	33	45
TOTAL ALL GEAR				
Sample Number	2,126	940	265	3,331
Hours Fished	22,921	10,078	4,193	37,192
Number of Shovelnose	2,880	1,789	1,520	6,189
Number of Pallids	26	14	33	73

6. Range Wide Scaphirhynchus Conference (RPA 2, pallid sturgeon):

This conference was originally scheduled for July, 2004. However, due to unforeseen coordination problems, it had to be postponed. The conference is now scheduled for January 11-13, 2005. In FY04, work continued to prepare for the conference including a call for papers, establishing the meeting place, arranging

key note speakers. It is anticipated that the upper and middle basin pallid recovery workgroups will hold their annual meetings in conjunction with this conference. The information shared as a result of this conference will significantly factor into the Pallid Habitat Conservation and Restoration Plan.

7. Middle Mississippi River Side Channel Analysis (RPA 2, pallid sturgeon). An evaluation of side channel connectivity in the Middle Mississippi River was conducted in FY04. This study concentrated on the hydraulic connectivity during the summer (low – water period) months and ranked their “condition” based on the level of connectivity. This will provide an additional planning tool for ranking side channel work, based on hydrology, as referenced in the Pallid Habitat Conservation and Restoration Plan. The study report will be furnished under a separate cover.

8. Emergency Dredging Biological Assessment (Term and Condition 5, pallid sturgeon).

In FY02, the Corps received a Biological Opinion which contains an Incidental Take statement with Reasonable and Prudent Measures and Terms and Conditions to be implemented should dredging become necessary during the 12 April through 30 June timeframe. No dredging was required during this time frame during FY04.

9. MMR Stone Dike Alteration Plan (RPA 3 & 4, pallid sturgeon, RPM 1 pallid sturgeon: RPM 1, least tern)

The initial effort which includes a complete inventory of existing stone dikes in the MMR, with photographs and attributes on each dike, is essentially complete. The MMR has been divided into reaches, substantially represented by dike fields, and each reach has been prioritized on the basis of opportunity. This study will be finalized and published in FY05; however, this study as it exists, in conjunction with the Side Channel Vision document, is being used to prioritize micro-model study reaches within the MMR. The draft study is available at the following ftp site: <ftp://ftp.mvs.usace.army.mil/arec/stonedike/> and the complete data base for the stone dike structures of the MMR is located at:

<http://www.mvs.usace.army.mil/engr/river/DikeInv/index.html>.

10. Modification of Dredge Disposal Techniques – ephemeral island creation (RPM 2, pallid sturgeon: RPM 2, least tern).

In a pilot project, an angled spill pipe for the Dredge Potter was modified to yield greater capability of directing dredge material in order to create small ephemeral islands. FWS and IDNR supplied possible locations for this pilot project and one site was chosen (R.M. 96.0) based on need for dredging and adequate material available. The results of this pilot project are still being evaluated. It is clear that, while the pilot effort yielded only limited benefits, this technique is viable and with continued refinement will be a valuable tool in the future.



11. Modification of Dredge Disposal Techniques – thalweg disposal (RPM 2, pallid sturgeon: RPM 2, least tern).

In a pilot effort, thalweg disposal in the MMR was carried out at Prices Bend (RM 31.0). This site was chosen by the RRAT. Other potential sites were discussed, but were rejected due to site specific biological concerns. Bathymetric, velocity, and hydroacoustic fisheries surveys were conducted both prior to and following disposal to ascertain physical response of the action. Early indications are that this effort was a success and will be repeated in appropriate areas to achieve similar results.

12. Habitat Map of the MMR (Term and Condition 3, pallid sturgeon: Term and Condition 3, least tern).

The habitat map of the MMR is complete and is available as an electronic file in ArcInfo format and on the following ftp site:

[\\mvsfs02gis\gis\gis\arcdata\AquaticHabitats\](ftp://mvsfs02gis\gis\gis\arcdata\AquaticHabitats\). In addition, a collection of side channel connectivity maps at various hydrographic stages have been developed and are available at the following ftp site:

[<\\Mvsfs02gis\GIS\Gis\Reegis\DGN\Aquatic_Habitats_2001\>](ftp://mvsfs02gis\GIS\Gis\Reegis\DGN\Aquatic_Habitats_2001\>)

The uses of these products continue to evolve. Produced primarily for quantifying habitat changes as required in the Opinion, they are now proving very important in the pallid habitat and demographics study. These products continue to be refined.

13. Pallid Sturgeon Flume Study (RPA 4, pallid sturgeon).

The study was designed to investigate the influence of water velocity, substrate type, water depth, and morphology on the habitat selection of juvenile pallid (*Scaphirhynchus albus*) and shovelnose (*Scaphirhynchus platyrhynchus*) sturgeon. Data collection was completed in FY03. Experiments in FY03 included observing habitat selection in individuals as well as intra- and inter-specific groups in relation to depth, substrate, morphology, light and differing velocities. This study will be published and presented at the Scaphirhynchus Conference in January, 2005. It is anticipated that this study will be useful in predicting distributions, as well as potential impacts of riverine habitat modification and restoration, and will assist us in our capture effort for the Pallid Habitat and Population Demographics study as well as population monitoring efforts into the future.

14. Middle Mississippi River Historic Island Survey (RPA 2, pallid sturgeon).

This effort was initiated in FY04 and is a complement to the Historical River Morphology of the MMR study completed in FY03. This effort focuses on an analysis of changes in island locations over time. The survey is based on survey maps, narratives and aerial photographs from the following periods: 1797-1798, 1814, 1821, 1870-1878, 1876-1881, 1908, 1928, 1965-1966, and 2003. During the next FY the location (channel boarder versus main channel) of the islands will be determined to evaluate how this may have changed over time. This effort will assist in the preparation of the Pallid Habitat Conservation and Rehabilitation Plan by supplying a further understanding of where islands were historically.

15. Red Rock Reach of MMR (RPA 2&4, pallid sturgeon, RPM 1, pallid sturgeon: RPM 1, least tern).

The micro modeling effort for the Red Rock reach (RM 86.0-93.0) is complete. The study reach lies within an area that was identified in the Side Channel Vision document as an area lacking habitat diversity. This reach was chosen for enhancement due to the large number of un-notched dikes, the very minimal dredging that occurs, and the location of the right descending bank firmly against the rock bluff line, which would minimize impacts to the bankline. The Pallid Restoration and Conservation Planning team was involved in the study from the outset and has chosen an alternative which will result in improved pallid sturgeon habitat for this reach of the river. This plan will serve as the initial project in the phased implementation of the Pallid Conservation and Restoration Plan for the MMR. Preliminary monitoring, survey, NEPA coordination and Tier II biological assessment will be conducted in FY05. It is anticipated that this project will be accomplished in FY06.

16. Incorporation of Woody Debris in Stone Work (RPA 4 and RPM 1, pallid sturgeon):

The St. Louis District placed driftwood into on bank revetments at the Maple Island chute in FY04. In May, 2004, 6 woody structures were placed in the chute. This marks the first time both woody structure and woody debris in shore protection have been used in conjunction with one another. This action was previously coordinated with IDNR and FWS personnel. This effort will be monitored for effectiveness in achieving the desired result.



The St. Louis District has received the final copy of the report evaluating macroinvertebrate use of the wood structure placed near the Chain of Rocks dam. The report concluded that the large woody structures were providing areas for macroinvertebrate colonization that were otherwise lacking in the MMR. The invertebrate community found using the wood structures was similar to those using navigation rock structures, indicating that for now, the hard surface, rather than the composition of the wood itself was driving the invertebrate community. Given the early stage of decomposition and the initial smoothness to the wood, these results were not surprising. As the wood continues to decompose it is likely that additional wood obligate species will begin to appear. Sixty-eight species were recorded between the surrounding substrate, rock structures, and the wood structures. Twelve species were found only in association with the wood. The substrate surrounding the wood piles did harbor a more species rich community than areas without structure, or the wood bundles (which likely were not sampled well due to high flows). The report concluded that future work should focus on creating more complex woody systems, to create greater depth, substrate, and velocity diversity; and that future work should include the driftwood which had accumulated on the pile dike. That driftwood appeared to be highly colonized by macroinvertebrates.

17. Modification of Traditional Structures/Protections (RPA 4 and RPM 1, pallid sturgeon):

The St. Louis District continued testing different solutions to protect roundouts below dikes on the MMR. At R.M. 56.0 (R), R.M. 37.2 (L), and R.M. 18.4 (R), overlapping toe dikes were constructed. At R.M. 61.1 (L) a toe dike with a notch, invert down to the river bed, was constructed. These pilot projects are designed to yield added environmental benefits where traditional bank stabilization actions must be taken. These will be monitored and evaluated for effectiveness and achievement of desired results.



18. Use of Innovative Structures (RPA 4 and RPM1, pallid sturgeon):

A chevron structure was constructed in the MMR during FY03. The structure is located at R.M. 103.4 (R) and was constructed with a 6 foot crown to elevation 353 NGVD. Monitoring has begun. Preliminary indications are that this will provide valuable habitat. The flow around the chevron is developing side channels on the right and left descending sides, a small plunge pool is developing behind the chevron and a mix of sand/silt/clay substrates has developed in the chevron shadow. Though there has been very little deposition below the chevron, flows

around the structure has begun to isolate the area in the shadow of the chevron. With continued isolation, this action will create an underwater island and island tip, which appears to be important pallid habitat. As an added benefit, the developing side channel on the left descending side appears to be isolating a sandbar created by dredging activities. If the separation occurs and the sandbar continues to emerge, it may well prove useful for least tern habitat. The developing side channel on the right descending side of the chevron is creating unique, hard bottom, high flow habitat. Very limited sampling of that area has already resulted in the collection of blue sucker, stonecat, and juvenile shovelnose sturgeon. Winter sampling at this site is scheduled to determine whether the developing plunge pool and the slackwater area behind the chevron is providing over-wintering habitat.



19. Pilot Project Santa Fe Chute (RPA 4, pallid sturgeon):

In March, 2004, the last of nine existing dikes was raised to high bank elevation. The closing structure at the head of the chute was also notched in FY03. The project started with a micro-model in FY96 and was constructed in four distinct stages, with monitoring after each stage to gage response. This work is described in the Side Channel Vision Document. It is anticipated that the result will be a side channel with much improved diversity, in particular, increased depth diversity and re-enforcement of a developing meandering channel. Monitoring to assure achievement of desired habitat results and to ascertain gross biological response has been initiated.



20. Other Efforts:

In addition to the above, the MVS PM attended meetings with the Middle and Lower Basin Pallid Recovery Workgroups as well as the MVD E-Action annual meeting. At these meetings, past and current activities, future challenges, and opportunities to collaborate were discussed. In response to requests from these meetings, St. Louis District has continued to organize and host a range wide Scaphirhynchus conference. Members of the St. Louis District Biological Implementation Team have been appointed to various Corps committees/teams to address individual threatened/endangered species on a range wide basis as well as to address larger ESA/Biological Opinion implementation and management issues.

PROJECTED FY05 EFFORTS

Based on current projection of FY05 funding in the St. Louis District, we anticipate proceeding with the following work. However, these are projections only, and may require adjustment in the event adequate funding can not be maintained. 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 conclude this FY. A final report will be developed and used in the Pallid Habitat Conservation and Restoration planning effort.
- b. The Pallid Habitat Conservation and Restoration planning effort will continue in cooperation with states and Service. It is projected that an initial draft will be produced at or near the end of FY05. The final plan is scheduled for completion at the end of FY06.
- c. Coordinate with the FWS and the FWS Pallid Recovery Team on pallid recovery and conservation efforts, and other issues as they arise.
- d. Continue coordination with the RRAT Technical Team and RRAT Executive Team. Continue work on refining coordination efforts through the RRAT framework.
- e. Continue to maintain the MMR habitat map and associated GIS database. NOTE: per the Biological Opinion and MVD Commander's response, we were to redo the bathymetry for the MMR, high bank to high bank, in FY05 and use this data to update the habitat map in order to track changes in pallid and least tern habitat. As a result of coordination and formal request from FWS Region 3, we will postpone this activity to the out years in order to pursue the opportunity to accomplish a pilot project in FY05. In coordination with the Service during the current FY, we will formulate an agreement on a suitable interval for bathymetry and update of the habitat map which will allow us to fulfill the Service's requirement to track habitat changes.
- f. Monitor pilot efforts on a macro scale concentrating on physical responses within the innovative structure pilot projects. Within the framework of the Audubon partnership continue monitoring the least tern pilot project, expanding the nesting and usage survey effort.
- g. Pilot Projects – Dredge the mouth of a side channel (Mo. Two Sisters is likely candidate). Prepare EA and Tier II BA for this effort, secure necessary section 401 and 404 permits (CWA), coordinate and complete the action.
- h. Prepare Tier II BA and accomplish the necessary NEPA coordination for the Red Rock – Tower Rock project to be constructed in FY06 per agreement with FWS Region 3 and MVD as a first staged implementation of the Pallid Habitat Conservation and Restoration Plan.
- i. Initiate effort to address *Boltonia decurrens* listing question and associated future management strategies with the FWS Recovery Team and Team Leader.
- j. Organize and host the range wide Scaphirhynchus Conference to be held in January, 2005. Use the proceedings to advance the Pallid Habitat Conservation and Restoration Plan.