

# Implementation of the Biological Opinion

## Annual Progress Report September 2002

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



**Implementation of the Biological Opinion  
St. Louis District – Mississippi Valley Division  
Fiscal Year 2002 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.

**FY02 ACTIVITIES**

The following is a synopsis of St. Louis District activities for fiscal year 2002. This was the second year of implementation activities under the Biological Opinion. Many of the activities undertaken reflect the fact that the initiative is still in its formative stages. Efforts included research and receipt of appropriate authorization, securing and maintaining adequate funding in all of our authorities, and continuing to expand coordination efforts within and beyond the St. Louis District. The vast majority of these initial challenges have now been met, and attention may be focused on coordinated, long range goals. 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 M.O.U. (RPA 2 & 4, pallid sturgeon: Term and Condition 4, pallid sturgeon: Term and Condition 4 least tern).** After a two year effort, a final Memorandum of Understanding (MOU) was prepared and signed by all the cooperating agencies. This document establishes the River Resources Action Team (RRAT) as a body which can address coordinated operations among the various signatory agencies. The MOU specifies the RRAT's mission, responsibilities and authorities, defines relationships, and generally sets forth an annual schedule for meetings and a mechanism for modifying this schedule. In order to ensure that the RRAT is an effective team both now and in the future, the MOU is a flexible document with a mechanism for periodic review and revision. It also reflects the autonomy of each signatory agency with regard to its own vision, policies, budget and manpower.
- 2. 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 Executive Session in November of this fiscal year. This was the first formal meeting and items discussed included refining methods of coordination for Dike and Revetment and Regulating Works as well as the dredging program. These methods will be evaluated at the next Executive Team meeting. Also discussed were the EMP-HREP coordination efforts, the frequency of RRAT and RRAT Executive meetings, and the overall effectiveness of the RRAT through the first year of operation. It was agreed that this is an evolving process and that we would continue to adjust as necessary. The next RRAT Executive Team meeting will be held in November, 2002.
- 3. 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 twice during the fiscal year, during April and again in June. The April meeting was held at the Distance Learning Classroom at the Great Rivers Museum. The format of the meeting was changed to allow the opportunity for U.S. Fish and Wildlife Service (FWS), Missouri Department of Conservation (MDC), and the Illinois Department of Natural Resources (IDNR) to discuss their ongoing and planned management/research activities as well as any updates on planning efforts and agency news. In addition, the following topics were discussed: EMP project fact sheets, HREP prioritization, pool plans, progress update on the RRAT MOU, dredging activities, Regulating Works and Dike and Revetment O&M activities, Stone Dike Alteration planning efforts, goals of environmental pool regulation for the year, and updates on implementation activities to include the pallid habitat and demographics study, pallid restoration and conservation planning effort, Middle Mississippi River (MMR) habitat map, side channel connectivity maps, micro-model of Red Rock reach, historical mapping of the MMR, continuation of the woody structure pilot project, least tern pilot project, incorporation of wood into dikes pilot project, placing a chevron in the MMR, and finishing the structural

work at Santa Fe Chute. Also discussed were O&M funding and EMP funding prospects for the current and next fiscal years.

The topics for the second meeting, held on pools 24, 25 and 26, included a discussion of repetitive historical dredging sites, current disposal methods and requirements for the current dredging season; discussions of Gilbert Chute and Cottonwood chevron projects and fish sampling results of the chevron area; EMP progress of various projects, ranking processes for new projects, present and future projected budgets, points of contact, and Calhoun Point and Schenimann Chute projects and their order of construction; discussion of IDNR's efforts to broaden the range of Higgins Eye mussel near Crider Island (federally listed species); American Lands Conservancy gave an update on their present and immediate future activities; chronic dredging problems at various areas and discussion of ways to address; A&M update and proposed future activities; current and future O&M Dike and Revetment and Regulating Works activities to include clarification of review activities; discussion of dam point control opportunities in pool 25; status of Environmental Pool Management activities; discussion of loss of funding in key contracts to dredging and implications for out years efforts; IDNR paddlefish study efforts; update on RRAT MOU; and prioritization of work for the future.

- 4. Pallid Restoration and Conservation Planning Team/Workgroup (RPA 2 & 4, pallid sturgeon).** The Pallid Restoration and Conservation Planning workgroup has been formed. This group has met three times this FY to consider planning efforts and one time to initiate a micro model effort in the MMR. Initial reaction from the group was not to produce reach plans but to produce an overall plan for the MMR. Ongoing 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, creel census data, commercial harvest data, micro-model results, and historical geo-morphological mapping of the MMR. Completed or on-going planning efforts 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. 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 will be coordinated through MVD with FWS and will be covered at the November RRAT Executive meeting.
- 5. Pallid Habitat and Population Demographics Study (RPA 1, pallid sturgeon).** The Pallid "Expert" team produced a Scope of Work (SOW) for the pallid habitat and demographics study, and it was reviewed by the RRAT in two draft stages

and final stage. The study was initiated in FY02 and efforts are concentrated on capture methods, gear, locations within habitat type and initial sampling. Dr. Killgore is heading the effort with SIU-C and MDC (open river station) as sub-contractors. A report on activities and partial synthesis of information for the initial year is expected to be available early in the second quarter of FY03. The effort is for the most part on schedule, however, final synthesis may not be available until mid FY06. During FY03, the Pallid "Expert" Team must be reconstituted due to the untimely death of Dr. Sheehan. This team is extremely important to the overall pallid effort, as it serves as the technical and peer review group for our efforts.

6. **Shovelnose Sturgeon Fin Clip Swim Test (RPA 1, pallid sturgeon).** Although previously unplanned, this study was necessary to gain permission to use this technique in order to be able to achieve information that FWS has specified and the Corps expects to obtain through the Pallid Habitat and Population Demographics study. The SOW was developed last FY and work was completed on this study in February of this year. The final report, which concluded no noticeable effect, was supplied to the FWS under a separate cover. To date, we have not received a definitive response to the study, however, we have received permission from Region 3 FWS to remove no more than a specified number of pectoral fins in furtherance of the Pallid Habitat and Population Demographics Study.
7. **Emergency Dredging Biological Assessment (Term and Condition 5, pallid sturgeon).** The Corps produced the Biological Assessment last fiscal year and consultation was initiated this fiscal year. Consultation was successfully concluded in June of this year. The Biological Opinion contains an Incidental Take statement with Reasonable and Prudent Measures and Terms and Conditions which will be implemented should dredging become necessary during the 12 April through 30 June timeframe.
8. **MMR Stone Dike Alteration Plan (RPA 3 & 4, pallid sturgeon, RPM 1 pallid sturgeon: RPM 1, least tern)** This effort includes a complete inventory of existing stone dikes in the MMR, with photographs and attributes on each dike. The MMR has been divided into reaches, substantially represented by dike fields, and each reach has been prioritized on the basis of opportunity. More stone dikes equates to a greater opportunity to effect a positive environmental change and a higher priority ranking. The lowest priority reaches are those which have the fewest stone dike structures. This study, when complete, will factor into the overall Pallid Restoration and Conservation planning effort. While not yet complete, this study, in conjunction with the Side Channel Vision document, is already being used to prioritize micro-model study reaches within the MMR. The 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>.

9. **Flexible Dredge Pipe Test (RPM 2, pallid sturgeon: RPM 2, least tern).** This test was conducted at the Head of Passes in New Orleans District from 4 June through 13 June of this year. Preliminary assessment indicates that this method does show promise, however, as with all new technologies, some problems must be overcome in order for this technology to be safely and efficiently implemented. Among the major concerns is the need to reduce drag coefficient on the floating (flexible) discharge pipe. In the test, the current exerted enough force on the pipe that the dredge had a difficult time maintaining correct alignment. As the analysis progresses and reports are received, they will be shared with the RRAT.



10. **Boltonia decurrens Inventory and Assessment (Conservation Recommendation 1, B. decurrens)** Inventory efforts for Boltonia decurrens during FY02 are reported in tables 1 and 2 below and reflect the second and third intensive inventory efforts. The purpose of the inventory shown in table 1 was to attempt to verify historical records and search for unrecorded populations of *B. decurrens*. 10 counties in Illinois (Calhoun, Pike, Brown, Morgan, Greene, Jersey, Bureau, LaSalle, and Grundy) and 2 counties in Missouri (St. Charles and Lincoln) were surveyed. While *B. decurrens* populations were confirmed at two sites in St. Charles County Missouri, no populations could be confirmed from the remaining inventory areas.

The purpose of the inventory shown in table 2 was to continue searching for previously unknown populations as well as to revisit a number of sites where *B. decurrens* had previously been confirmed. This effort indicates that approximately 378,880 *B. decurrens* plants were confirmed in 27 populations at 14 Illinois and 1 Missouri county sites.

**Table 1 – Historical Verification Effort (2001-2002)**

County, State	# sites surveyed	Date surveyed	# Populations
Brown (IL)	6	9-10-02	1
Bureau (IL)	16	9-12-02	2
Calhoun (IL)	57	9-10-02	0
Cass (IL)	37	9-10-01	2
Fulton (IL)	52	9-12-02	3
Greene (IL)	36	9-10-02	0
Jersey (IL)	44	9-10-02	1

LaSalle (IL)	17	9-12-02	1
Madison (IL)	3	9-13-02	1
Marshall (IL)	34	9-12-02	2
Mason (IL)	11	9-12-02	0
Morgan (IL)	24	9-10-02	1
Peoria (IL)	31	9-18-02	1
Pike (IL)	38	9-10-02	0
Putnam (IL)	28	9-12-02	0
Schuyler (IL)	24	9-12-02	4
Scott (IL)	27	9-10-02	0
St. Charles (MO)	6	9-13-02	5
St. Clair (IL)	2	9-13-02	1
St. Louis (MO)	1	9-13-02	0
Tazewell (IL)	12	9-18-02	1
Woodford (IL)	23	9-18-02	1

**Table 2 – Resurvey Selected Sites and Look for New (Sep. 2002)**

Site name	County (State)	# of <i>B. decurrens</i>	Site description
<b>ILLINOIS SITES</b>			
Anderson Lake	Fulton (IL)	189	Northern end of campground,
Banner Marsh	Fulton (IL)	125	Scattered in open areas throughout marsh
Beardstown	Cass (IL)	8	Northwestern end of field lying south of bridge on eastern shore
Big Lake	Schuyler (IL)	271	In field between Illinois 100 and Big Lake
Browning	Schuyler (IL)	>250,000	In field between Illinois 100 and Illinois River, ~279 plants in ditch along eastern side of Hwy 100, ~12 plants on western side of road
Cooper Park	Tazewell (IL)	140	Open area between trail west of parking lot and Illinois River
Fairmont City	St. Clair (IL)	50	Abandoned golf course
Frederick	Schuyler (IL)	39	Borrow pit east of Illinois 100 on Main Street
Frederick	Schuyler (IL)	15	Boat landing on Illinois River, eastern end of Main Street
Gilbert Lake	Jersey (IL)	200	Open area west of Illinois 100 at Pere Marquette stable
Hennepin Bridge	Bureau (IL)	200	On western side of river under old bridge by grain barge terminal
Goose Lake (Upper)	Marshall (IL)	20	Western shore of lake

Henry	Marshall (IL)	2	North side of Hwy 18 on western side of river, right before crossing bridge by a parking lot
Huse Lake *	LaSalle (IL)	~50,000 4	South of LaSalle Along ditch of Hwy 351 Separated from main body of Huse Lake population
Meredosia Lake	Morgan (IL)	50	Scattered between eastern lakeshore and road
McClugage Bridge	Peoria (IL)	50	Illinois American Water Co. property, open area
Rice Lake	Fulton (IL)	75,000	West of pump station on Copperas Creek, leveed compartment flooded each fall by IDNR
Sanganois State Wildlife Area access	Cass (IL)	2	Along access road from IL Hwy 100, area adjacent to road appeared to have been treated with herbicide
Spring Valley*	Bureau (IL)	22 plants	West of Hwy 89 on northern side of Illinois River
Waste Management	Madison (IL)	200	Open area west of railroad tracks
Woodford County Conservation Area	Woodford (IL)	150	Open area east of campground
<b>MISSOURI SITES</b>			
Borrow pit by saw mill	St. Charles (MO)	1000	Plants in borrow pit east of road and south of old farmhouse by saw mill, 1 mile west of FISCA station on Highway 67
EDA, Alton Slough	St. Charles (MO)	200	.25 miles south of FISCA station
MODOT mitigation	St. Charles (MO)	350	1 mile north of W. Alton, in field east of highway 94
Zimmerman Farm	St. Charles (MO)	100	Located east of Zimmerman farm building around ephemeral pond and at base of levee
Hwy 94 levee	St. Charles (MO)	500	Scattered at base of levee crossing Highway 94 in St. Charles County (MO)

**\*New population**



We now have inventory records dating from 1995 to present. Several sites have been inventoried each year and *B. decurrens* continues to persist at many of these sites. In addition, as stated in the Year 2000 Inventory Report as referenced in the 2001 Annual Progress Report, sufficient knowledge of the basic biology and ecology of the plant now exist to understand habitat requirement and to promote population survival. Efforts during the coming fiscal year will concentrate on evaluating where we are in relation to the Federal Recovery Plan (UFWS 1990) and proceed with those remaining activities as indicated by this plan.

**11. 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\>)

While the side channel connectivity maps were chiefly developed to answer various questions concerning water regulation changes on the Missouri River, they proved to be very useful in developing the final version of the MMR habitat map and will prove to be even more useful in pursuing specific habitat type projects in the MMR as well as to the Pallid Restoration and Conservation planning effort.

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

Field collections of young sturgeons are rare, and as a consequence, the microhabitat used by juvenile pallid sturgeons has not been described. Due to the enormous difficulties of studying the life history and population dynamics of sturgeon in the field, we are conducting laboratory research to obtain additional information on juvenile sturgeon habitat preferences for velocities and substrates. The study is designed to investigate the influence of water velocity, substrate type, and morphology on the habitat selection of juvenile pallid (*Scaphirhynchus albus*) and shovelnose (*Scaphirhynchus platyrhynchus*) sturgeon. An 18,927 l (5000 gal) elliptical flume is being used in the laboratory to quantify the distribution of individuals and groups of sturgeons in relation to water velocity (0-125 cm/s), substrate type (sand, gravel, woody structure), and morphology (main channel, main channel border, sand bar, gravel bar, etc.).

To date, 29 experiments have been conducted using individual pallid or shovelnose sturgeon at low or medium velocity. Experiments in FY03 will include intra- and interspecific groups at differing velocities, as well as response to artificial structures (i.e. dike). The data will be analyzed using an extension of logistic regression that uses generalized estimating equations (GEE) rather than normal distribution theory. 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. This study should be completed in the second quarter of FY03.

- 13. Historical Comparative Geomorphologic Mapping of the MMR (RPA 2, pallid sturgeon).** This effort was embraced by the Pallid Recovery and Conservation Planning workgroup as necessary to understand the dynamics of the river and to assess the possibility of habitat work in selected reaches. If islands, side channels, connected backwaters, etc. historically existed within a reach over a period of time, this may indicate a good reach for evaluation and possible restoration of these habitat types. Conversely, this effort could also point to reaches where it would be very difficult and expensive to attempt restoration of habitat types that historically did not exist or persisted only for a short duration. The status of this effort is as follows: Historical survey maps have been scanned, warped and geo-referenced into the computer. Comparative computations have been made on various physical river parameters and the river of today is compared to the river of the past, starting in the early 1800s and progressing to today. In order to assure accuracy, a cadastral analysis of the surveys is currently being conducted. Any adjustments required, as determined by this analysis, will be accomplished. The final product and a presentation of all findings should be available to the workgroup and RRAT early next FY.
- 14. Prepare Pallid Sturgeon Stocking Feasibility Report (RPA 2&4 pallid sturgeon, Conservation Recommendation 3, pallid sturgeon).** A draft Pallid Sturgeon Stocking Feasibility Report has been prepared. This report will be circulated to the Pallid Restoration and Conservation Planning workgroup and MVD for comment during the first quarter of FY03. Following this review, the report will be forwarded to MVD for concurrence and approval. This report will also be shared with the RRAT during the spring meeting.
- 15. Micro Model Effort on Red Rock Reach of MMR (RPA 2&4, pallid sturgeon, RPM 1, pallid sturgeon: RPM 1, least tern).** Micro modeling methodology is being used to evaluate the existing sediment transport conditions and the impact of various design measures to improve environmental conditions in the Red Rock reach (RM 86.0-93.0) of the Mississippi River. 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. Red Rock study area contains 4 dike fields with a total of 27 stone structures. The various alternatives tested were based on suggestions from the Pallid Restoration and Conservation Planning team. The results of the tests will be evaluated by this team next FY.
- 16. Woody Structure in the MMR (RPA 4, pallid sturgeon)** This pilot project, initiated last FY, was continued this year. In December 2001 and March 2002, the St. Louis District placed wood structures at two locations along the main channel border of the Middle Mississippi River. These sites were in the old river channel, north of St. Louis, below the Chain of Rocks low water dam. Site one was located on the left descending bank between dikes 186.3. and 185.8. Thirty five wood

structures (log bundles) were placed at this location. Two different types of bundles were placed. Sixteen bundles with interlaced logs were placed in December and an additional 19 bundles were placed in March. The March bundles, representing the last of the wood and the most difficult to work with, were cinched together rather than interlaced. All told, nearly 300 logs were placed at this site. Bundles were placed in approximately 10-15 feet of water and in a line perpendicular to the bank. Bundles were placed in higher flows with the intention of amplifying areas of deposition and scouring, thereby increasing localized habitat diversity. This work completes the construction phase of the woody structure work (all the wood is now gone). Focus will now shift to physical and biological evaluation of the existing woody structure sites. After evaluation and monitoring, the St. Louis District, and its partner agencies in this effort, will determine the need for, and the viability of, future woody structure work.



**17. Incorporation of Woody Debris in Dikes (RPA 4 and RPM 1, pallid sturgeon):** The St. Louis District modified the Dike and Revetment contract for the Chester reach (RM 103 – 120) to include placement of driftwood into selected dikes. This action was previously coordinated with IDR, MDC and FWS personnel. The wood was to be placed in random order and alignment in order to gain the greatest benefit. In FY02, logs were placed in seven rock dike structures (Dike 119.3R, 119.0R, 118.3R, 118.1R, 117.9R, 117.6R, and 117.5R). The logs were placed randomly anywhere from 30 foot to 185 foot from the end and in both upstream and downstream sides. This effort will be monitored for effectiveness.



**18. Incorporation of Notches in Dikes (RPA 4 and RPM 1, pallid sturgeon):** A variation of notching dikes was completed in the MMR this year. In the RM 103 reach, L-Dikes were modified to incorporate notches at strategically placed areas which resulted in a dike which serves the navigation portion and a stretch of revetment which we expect will have similar environmental benefits as off bank revetment. This pilot project will be monitored to assess the general navigational and environmental effectiveness. The monitoring results will be shared with the Pallid Restoration and Conservation workgroup.



**19. Modify Tip of Ellis Island to Restore Least Tern Nesting Habitat (RPM 3, least tern, Conservation Recommendation 1).** The St. Louis District restored approximately 0.8 ac. of isolated sandbar habitat for interior least tern. The pilot project is located at the tip of the Ellis Island area, just up stream of Melvin Price Locks and Dam in the Missouri River confluence area. Continuous records dating from prior to World War II, indicate that least tern have historically nested and courted in this area. While courting activity remains strong, nesting activities have drastically declined as the sandbars began to vegetate and the pool was raised behind the new locks and dam. This pilot project will be maintained and monitored under a Challenge Cost Share Agreement with St. Louis Audubon Society.



## PROJECTED FY 03 EFFORTS

Based on current projection of FY03 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 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 continue and monitoring for progress and quality control will likewise continue. (year 2 – first full year – of a 3 year effort)
- b. The pallid restoration and conservation planning effort will continue to advance in cooperation with states and Service. It is now projected that this effort would be completed in FY06 in order to gain the most benefit from the Pallid Sturgeon Habitat and Population Demographics study as well as other inter-related efforts such as the Stone Dike Alteration Plan, the pallid genetics work, pallid stocking feasibility report and recommendations, various micro modeling efforts in the MMR, construction and monitoring of pilot projects, and Historical Comparative Geomorphologic Mapping of the MMR.
- c. Coordinate with the FWS and the FWS Pallid Recovery Team on pallid recovery and conservation planning 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. Update and continue the MMR gravel bar survey effort. Information to be included in the MMR habitat map GIS database.
- f. Monitor pilot efforts. In particular, concentrate on the woody structure effort focusing primarily on the biology. Within the framework of the Audubon partnership monitor least tern pilot project, concentrating on nesting and usage survey data.
- g. With the pallid restoration and conservation planning team/workgroup, evaluate the results of the FY02 Red Rock Reach micro model efforts with a goal to develop the best plan of action. This study may result in a possible pilot project, or series of pilot projects beginning in FY04 or FY05.
- h. Pilot Projects – complete Chester reach contract that contains addition of woody debris to the dikes and strategic notching of dikes. Build chevron in MMR as agreed to in June 2001 and ratified in the June 2002 RRAT meeting.
- i. Continue synthesis of terrestrial inventory for lands managed by the Corps in the MMR – this information to be made available to pallid restoration and conservation planning effort.
- j. Address future *Boltonia decurrens* management activities with the Service.
- k. Continue to develop the MMR Stone Dike Alteration Plan. (Multi year effort)