

# RESTORING AMERICA'S GREATEST RIVER: CHALLENGES AND OPPORTUNITIES

*by Dr. Ron Nassar*

*Coordinator, Lower Mississippi River Conservation Committee*

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## **History**

The Mississippi River conjures images of great floods, the New Madrid Earthquake of 1811, steamboats, plantations, the Civil War. The mighty river is the very essence of the South.

Generations of writers such as Mark Twain, William Faulkner, Douglas Brinkley, Stephen Ambrose, F. Scott Fitzgerald, and T.S. Elliot immortalized the river. It also figures prominently in American music with songs from artists such as Johnny Cash, Randy Newman, Clara Edwards, A. W. Mason and Charlie Maguire.

In 1803 President Thomas Jefferson authorized the Louisiana Purchase, acquiring 828,000 square miles in the heart of North America from France for \$23.2 million. At the time, this action faced considerable domestic opposition as possibly being unconstitutional.

Although Jefferson was of the opinion that the U.S. Constitution did not contain provisions for acquiring territory, he decided to purchase the "Louisiana Territory" because he felt that France and Spain might ultimately block American trade access to the port of New Orleans. The Louisiana Purchase comprised portions of 15 current states and two Canadian provinces.

The land contained all of present-day Arkansas, Missouri, Iowa, Oklahoma, Kansas and Nebraska; parts of Minnesota south of the Mississippi River; most of North Dakota; nearly all of South Dakota, northeastern New Mexico and northern Texas; the portions of Montana, Wyoming, and Colorado east of the Continental Divide; and Louisiana on both sides of the Mississippi River, including the city of New Orleans.

These lands constitute nearly 23 percent of the United States; the Lower Mississippi River literally served as the "highway" for opening them to development. Settlement of the lands included in the Louisiana Purchase began in New Orleans in 1718 by French settlers; 450 people lived there in 1722 when it was designated the capital of Louisiana. The early history of the Lower Mississippi Valley was clearly river-centric and remains so to a large extent even today because of the important role it plays in the region's economy.

## **Flood of 1927**

Because it was the defining event in the settlement and economic development of the Lower Mississippi Valley, no discussion of the Mississippi River is complete without mention of the Flood of 1927. It was described at the time as the "greatest peacetime calamity in the history of the country."

The flood was spawned by heavy rains that fell on the central portion of the Mississippi River's 1.25 million-square-mile watershed during the summer of 1926; by September, tributaries in Kansas and Iowa were swollen to capacity. Prolonged, valley-wide rains continued into spring of 1927 until the Mississippi River broke out of its levee system in 145 places, flooding 27,000 square miles (16,570,627 acres) as deep as 30 feet in some places.

The flood affected Arkansas, Illinois, Kentucky, Louisiana, Mississippi and Tennessee. Arkansas was hardest hit, with floodwaters covering 14 percent of its territory. By May 1927, the Mississippi River below Memphis reached a width of 60 miles; the floodwaters did not subside until August 1927. Estimates pegged damages at more than \$400 million; 246 people were killed in seven states; 700,000 people, including 330,000 African-Americans who were moved to 154 relief camps, were displaced.

## **Challenges**

As a result of the 1927 flood, it became abundantly clear that, if sustainable economic development were to occur in the Mississippi Valley, the federal government would have to assume responsibility for regional flooding control efforts. The U. S. Congress subsequently passed the Flood Control Act of 1928, which authorized the U. S. Army Corps of Engineers to initiate a thorough reevaluation of its flood control program for the Lower Valley.

This ultimately resulted in the Mississippi River and Tributaries Project (MR&T Project), the nation's first comprehensive flood control and navigation act. The MR&T Project changed the river-engineering emphasis from primarily levee containment of floodwaters to a system of levees with floodways, outlet channels, channel stabilization and tributary basin improvements that would facilitate river transportation and reduce the effects of flooding.

Since 1928, regulation of the Mississippi River has focused on flood control to protect the region's inhabitants and maintaining a stabilized navigation channel to foster further economic development.

## **Loss of Nationally Significant Natural Resources**

Without the MR&T Project, it is certain that only a small portion of the Mississippi Valley could have been settled and developed a stable economy. While these actions were necessary to successfully develop one of the most productive agricultural areas in the world, they have inadvertently precipitated the loss of aquatic habitat in the 2.8 million-acre floodplain within the levees of the Lower Mississippi River.

Concern over the potential degradation of the aquatic natural resources in the North America's largest river led to the formation of the Lower Mississippi River Conservation Committee (LMRCC) in 1994. The organization is a coalition comprised of one representative each from the natural-resource management and environmental-quality agencies of Arkansas, Kentucky, Louisiana, Mississippi, Missouri and Tennessee.

It was established on the premise that: 1) The Mississippi River can also be managed to provide additional benefits to the people and the economy of the Lower Mississippi Valley by expanding the MR&T Project to include environmental restoration of America's greatest river; 2) Such actions can be successfully undertaken without compromising the congressionally mandated mission of the U. S. Army Corps of Engineers to provide protection from flooding in the Lower Mississippi Valley, thereby enhancing economic development. ■

*In the next issue of River Packet, we explore the conservation and economic opportunities of Restoring America's Greatest River.*

# PARTNERS RESTORE THE LOWER MISSISSIPPI RIVER: LOOSAHATCHIE BAR HABITAT ENHANCEMENT PROJECT

*by Dr. Ron Nassar*

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Loosahatchie Bar is obviously the namesake of the Loosahatchie River; the name is partially redundant because the word “hatchie” means “river” in several Native American languages common to the southeastern United States.

The Loosahatchie River originates in the westernmost part of Hardeman County, Tennessee, and it flows largely east to west throughout its length. It enters the Mississippi River on its east bank, slightly north of Memphis, Tennessee, near Mud Island in Shelby County.



Loosahatchie Bar is located on the west bank (Arkansas side) of the Mississippi River, slightly downstream from the Loosahatchie River’s mouth. Redman Point, located in Crittenden County, Arkansas, forms the northern end of Loosahatchie Bar.

Because the Mississippi River meandered widely through its floodplain, the Redman Point x Loosahatchie Bar complex is located in two counties in two states. The Bar extends a distance of more than seven river miles and was historically characterized by a maze of secondary channels that provided wetland habitat for numerous species of native fish and wildlife.

In the 1960s, stone dikes were constructed by the U. S. Army Corps of Engineers Memphis District to divert flow away from the Redman Point x Loosahatchie Bar secondary channel complex into the Lower Mississippi River navigation channel. The objective of chute closure with dikes was to divert as much low-river flow into the main navigation channel as possible to ensure safe navigation. The more sand that accumulated among dikes and in the back chutes, the more deep water was available in the channel to keep it open during low river stages. Although these dikes were necessary to protect the western approach to the Interstate 40 Bridge and ensure that barge traffic was able to pass safely under it, they have caused unavoidable environmental consequences.

When the dikes were constructed, few environmental studies had been done on the big Mississippi River; the Endangered Species Act and the National Environmental

Policy Act (NEPA) had not yet been conceived. The river was believed too big to study and too big to be impacted by seemingly minor changes from a few dikes. Thus, not much was known about aquatic impacts and nobody really cared about them.

Sedimentation has increased in Loosahatchie Bar, as it was originally designed to do, causing loss of aquatic habitat and restricting passage of riverine fishes through the area. Water levels in the Bar’s secondary channel provide adequate fish habitat during spring and early summer but often decrease to a level in autumn

where fish may be trapped between the dikes in the secondary channels and die due to low dissolved-oxygen levels.

In 2006 the Lower Mississippi River Conservation Committee (LMRCC), U. S. Army Corps of Engineers Memphis District and Mississippi Valley Division and the U. S. Fish and Wildlife Service began discussing potential construction of environmental restoration features in Loosahatchie Bar. The Memphis District River Engineering Team, in collaboration with its Environmental Branch and Division-level Mississippi River & Tributaries Project and Environmental Branch personnel, developed a viable construction plan in 2007.

Beginning in 2008, the LMRCC will use funding provided by the U. S. Fish and Wildlife Service Fish Passage Program and several non-governmental conservation organizations to construct 12 Corps of Engineers-designed notches in nine existing dikes. These notches will require moving more than 26,000 tons of stone to restore flow in more than 11 miles of secondary channel in the Bar and improve water quality during all but extremely low river stages.

Notches will be constructed utilizing land-based, low ground-pressure equipment (hydraulic excavators and bulldozers) to pull rock downstream from the dikes. Construction of a rock apron immediately below the dike prevents formation of a plunge pool that might otherwise compromise its structural integrity.

A barge-mounted hydraulic excavator will construct notches in one area that rarely dries sufficiently to support ground-based equipment and to remove 300 feet of existing pile clumps, which are linear arrays of driven, cable-banded wood pilings – precursors of rock dikes no longer required in the Loosahatchie Bar complex.

The long-term effects of this project will be to increase the depth of the secondary channel but overall channel structure is not likely to change significantly. Slight, temporary increases in turbidity will occur within the immediate work area but no other alterations to water quality are expected from project construction.

Depending on the availability of federal/state funding, the project may be expanded after its completion to include habitat restoration features. Grant proposals are being submitted for construction of rock hard points and other structures (cable-banded log piles constructed from downed trees that have floated onto the sandbar during high water stages), to improve habitat for recreationally and commercially important fish species.

This project has numerous public and environmental benefits. When completed in 2009, it will: Increase public outdoor recreation opportunities (hiking, boating, fishing, camping, birding, etc.) in the Memphis/West Memphis, Arkansas, metropolitan areas.

Improve habitat for the federally endangered pallid sturgeon and the interior least tern by severing the existing land bridge between tern nesting areas and the bank, decreasing nest destruction by terrestrial predators.

Create additional habitat for recreationally and commercially important fish species.

Further public interaction with the Mississippi River, which will increase support for additional restoration and opportunities for public education.

The Redman Point x Loosahatchie Bar habitat restoration project would not have become a reality without the permanent natural resource conservation forum provided by the Lower Mississippi River Conservation Committee, a coalition of Arkansas, Kentucky, Louisiana, Mississippi, Missouri and Tennessee natural-resource conservation and environmental-quality agencies. This partnership represents one of the best examples of state, federal, and nongovernmental conservation organizations working cooperatively to provide public benefits and environmental restoration in the Southeast United States. ■

*John Rumancik Jr., fishery and wildlife biologist for the Memphis District of the U.S. Army Corps of Engineers, contributed to this article.*

# FUN DAY IN THE PARK

Story & photos by C. Richard Cotton

What do you have when you mix together sun, activities, food and fishing? Why, a Fun Day in the Park, of course.



Fun came in many forms during Fun Day in the Park last August at Great River Road State Park. A Boy Scout gives one of the young visitors a ride on the two-seat ferris wheel.

Although the first annual event at Great River Road State Park was held under a brilliantly blazing sun on one of the hottest days of the year last August 11, the heat was still not enough to burn out participation.

“Park rangers estimated there were 1,000 people there,” said Mike Hutson, immediate past development coordinator for the Lower Mississippi River Conservation Committee, one of the event sponsors. Although expectations were for about twice that many people to attend, the turnout was not disappointing.

Hutson explained that the reasons for holding the park day were threefold: 1) help western Bolivar County focus on the natural resources of the Mississippi River; 2) utilize an underused state park; and 3) provide Rosedale’s 2,500 residents a day of outdoor recreation practically in their own back yards.

“We picked the day because of the stage of the River,” Hutson explained. For the first time, four-wheelers were allowed in the park; low water was essential so the ATV riders could access and ride on the huge exposed sandbar that comprises much of the park’s river frontage.

Kids thronged to the early-morning fishing rodeo held in one of the park’s ponds. Earlier in the week, catfish had been released into a netted-off section of the pond. Gleeful young anglers pulled out catfish that would eventually end up in the family frying pan.

Fishing gear and bait were provided by the Mississippi Department of Wildlife, Fisheries & Parks personnel present for the event.

Over near the park’s observation tower, Boy Scouts erected a rope-powered, two-man ferris wheel that proved to be one of the most popular attractions. Visiting youngsters lined up for a chance to spin on the contraption.



A few feet away, other youngsters played an old-fashioned rope game; they had to move wooden silhouette figures from a distant starting point to where they stood by manipulating ropes running through holes in the figures.



Youngsters of all ages found the wildlife exhibits exciting, while riders enjoyed access to one of the finest state parks in the area.

Food and cold, refreshing drinks were also available. The liquid refreshment was especially welcome in the searing heat.

On the south side of the park, several vendors catering to 4-wheeler riders operated their booths. They offered everything from helmets and gloves to mechanical service.

“We know it was a success just to be able to put it together and get it off the ground,” said Rosedale Mayor Carey Estes.

“We’re already planning the next one,” Hutson said, “probably in the fall or late spring when it’s cooler.”

One project Estes and other organizers want to get going is the construction of some trails in the park that will be used by the ATVs and horseback riders, who were also present for Fun Day in the Park.

Estes again: “Anything you can do to create fun and entertainment for your community gets high visibility for the park.” He reported more than \$9,000 was raised that day; a bake sale even made \$400.

Hutson said the event netted a profit of about \$3,000, which will serve as seed money for the next Fun Day.

“Imagine if you had events like this all the way down the river. It would help all the small towns along it,” mused Cheryl Line, tourism director for the Cleveland/Bolivar County Chamber of Commerce. “People are fascinated with the river.”

Line said events like Fun Day in the Park could help the river roads network become designated a National Scenic Byway, desirable as a draw for tourists.

“Keep in mind it was the first one,” Tony Garrett, acting manager of Great River Road State Park, said of the inaugural event. “It was a very positive thing but we’ve got to build on it.”

Other agencies sponsoring the event included the U.S. Fish & Wildlife Service, the Bolivar County Sheriff’s Department and the Rosedale Police Department. ■

**MORE PHOTOS FROM FUN DAY IN THE PARK —**





# ISLAND 63 REHAB: RESOUNDING SUCCESS IS BENCHMARK

by C. Richard Cotton

It is being hailed as a groundbreaking effort, an innovative exercise in federal-state agency cooperation.

The working relationship among various governmental agencies, such as the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers and the six states in the Mississippi Valley, is nowhere more visible than at the Island 63 rehabilitation project on the Mississippi River west of Clarksdale, Mississippi.

“It’s a precedent-setting thing,” said John Rumancik Jr., fishery and wildlife biologist for the Memphis District of the Corps. “This might be the tipping point.”

The “tipping point” project comprised excavating a 300-foot-wide notch in a rock dike constructed after the 1973 flood to prevent a secondary channel from capturing too much of the Lower Mississippi River’s flow. Had the meandering river adopted this channel, navigation might have been seriously impacted.

Rumancik said the plan was to let the river’s current remove a sandbar that had all but blocked the channel; it worked. “The current is taking the sandbar out like it was planned,” stated Rumancik. “That’s kind of unusual, keeping a chute open without maintenance. Everyone involved is really satisfied.”

Among the satisfied customers are Ron Nassar, coordinator of the Lower Mississippi River Conservation Committee; Darian Chasteen, river engineering team leader for the Memphis Corps; Ron Garavelli, director of fisheries at the Mississippi Department of Wildlife, Fisheries & Parks; and Tom Sinclair, a U.S. Fish & Wildlife Service Southeast Region fisheries program supervisor.

“Ron (Nassar) approached us at our annual environmental meeting and said the Fish and Wildlife Service had money that was earmarked for restoring fish passage,” Chasteen recalled of the Island 63 genesis.

Nassar coordinated several interagency discussions with the above-mentioned participants and a consensus was reached, declaring Island 63 an excellent project location: “This project met all of the criteria for a successful joint federal-state agency habitat restoration project. It was very cost effective to construct, it improved public outdoor recreation opportunities in a 5.5-mile-long secondary channel and it improved habitat for the

federally endangered pallid sturgeon,” Nassar said of the process.

Operating under the LMRCC umbrella, Nassar suspects, worked to lower barriers that in the past prevented more cooperation between the various agencies.



“The LMRCC provides a regional forum for addressing natural resource issues associated with the Lower Mississippi River, that reach extending from the confluence of the Mississippi and Ohio Rivers at Cairo, Illinois, to its mouth in the Gulf of Mexico,” Nassar explained. “The Corps’ Environmental Operating Principles, established in March 2002 by Chief Engineer Lt. Gen. Robert Flowers, enabled the Memphis District to make aquatic habitat restoration a priority, along with their congressionally mandated navigation and flood control missions.”

Garavelli explained that Island 63 “was just one of the secondary channels in the river that the Mississippi Department of Wildlife, Fisheries & Parks wanted to re-establish.” It’s the tip of an 80-project iceberg of similar undertakings that Garavelli wants to see constructed along Mississippi’s portion of the river



Island 63 is just one part of the LMRCC’s “Restoring America’s Greatest River” plan, a six-state effort consisting of 239 projects along the lower river’s 954-mile length.

Some of these projects are similar to Island 63 but the list also includes public boat ramps and other habitat restoration efforts that are being prioritized so the agencies can effectively use taxpayer monies.

“So many times we were at odds with the Corps,” said Sinclair, “but now we’re funding more and more projects designed to increase opportunities for public recreation and stimulate economic development in small riverside communities.

“For years, we tried unsuccessfully to work on the Apalachicola River at Jim Woodruff Lock & Dam in Chattahoochee, Florida. Now, the Corps of Engineers has agreed to work with us to provide passage through the structure for Alabama shad and Gulf striped bass.”



Rumancik has been with the Corps long enough to remember a very different mindset: “Fifteen years ago, it was tense at some of these meetings.”

Chasteen echoed that: “At the start of my career 16 years ago, there were some adversarial attitudes.”

Already, Rumancik said, the newfound collaborators “are looking at another area” to initiate a fish-passage project. It’s a 11+ mile-long chute to be opened on the Arkansas side of the river across from Memphis. Presently called the “Memphis Front,” the location was chosen at least in part because it will be a high-visibility undertaking and is certain to catch the attention of many area residents. This project also supports the goals of the Mississippi River Corridor-Tennessee, a state natural resource-based economic development effort designed to capitalize on the nation’s rapidly growing nature tourism industry.

Does the cooperative spirit signal a new era? Yes, because initiation and completion of the river projects is a boon for the agencies enjoying the can-do spirit, a boon for the public and, of course, a boon for recreational and commercial fisheries.

“The main thing,” declared Sinclair, “is cooperation. The Corps of Engineers has gone out of its way to design complementary economic and environmental solutions that conserve the nation’s natural resources.” ■



The team spearheading the Island 63 Rehabilitation Project included (clockwise from left) Zack Cook, civil engineer - River Engineering Team of U.S. Army Corps of Engineers Memphis District; Garry Lucas, fisheries biologist with Mississippi Wildlife, Fisheries & Parks; Mike Hutson, LMRCC economic development coordinator; and Dr. Ron Nassar, LMRCC coordinator.

# AQUATIC NUISANCE SPECIES CAUSING PROBLEMS

by **C. Richard Cotton**

Many a successful fishing trip has been described as a day “the fish were jumping into the boat.” Anglers relished the day that might happen.

Well, it’s happening along parts of the Lower Mississippi River and it turns out to be a bad thing for two reasons. First, silver carp frightened to the point of jumping as boats pass through their habitat have hit and injured boaters.

Second, according to Dennis Riecke, the jumping carp are merely the most visible of several problematic invasive aquatic species that are proliferating along the reaches of the Lower Mississippi. Riecke, fisheries biologist with the Mississippi Department of Wildlife, Fisheries & Parks, says the jumping carp actually benefitted the education effort about nuisance species because of the publicity it generated.

“It even made CNN,” says Dr. Jack Killgore, citing a news story being filmed about the problem last summer when the network reporter was hit by a flying carp.

Killgore, research fisheries biologist at the U.S. Army Corps of Engineers’ ERDC (pronounced ur-deck for Engineers Research & Development Center) in Vicksburg, was himself a victim: “I got hit in the eye last summer by a 10-pound silver carp. It knocked my glasses off and gave me a black eye.”

Riecke and Ron Garavelli, MDWFP’s director of fisheries, name three species of carp – all of Asian origin – in waters of the Lower Mississippi River that are of concern to them and their colleagues. They are the silver, big head and black carp.



To a lesser degree the grass carp is considered a nuisance; while it is still used by aquaculturists for weed control, they are now required to utilize only sterile stock. Also being closely monitored is the zebra mussel, which can colonize water intake structures at plants, water treatment facilities and other intake and outflow structures, restricting water flow.

“We don’t really see a lot of zebra mussels,” says Killgore. “They have not taken hold in the Lower Mississippi.” Primarily a coldwater species, the zebras have not yet adapted to the much warmer waters far south of the Upper Midwest and in the Great Lakes, where the mussel is much more pervasive.

## Aquatic Nuisance Species (continued)

Killgore notes, though, that big head and silver carp “have increased exponentially in the past six to seven years, beyond what we could have imagined.”

Mark Boone, fisheries management biologist for the Southeast Region of the Missouri Department of Conservation agrees that silver and big head carp are his biggest concern, though he is “trying to prevent the spread of zebra mussels from the Mississippi River into other water bodies.”

His primary efforts are aimed at prevention on the user level. Posters at water access points, brochures at sportsmen’s fairs and other expositions and Web site instruction are among the methods Boone and his counterparts in other states employ to prevent the spread of mussels on vessels moved from mussel-populated waters to mussel-free waters. Boaters are urged to rinse all boat surfaces and their live wells before leaving a landing.

“Prevention is the key,” reiterates Jay Troxel, fishery biologist and coordinator of the U. S. Fish and Wildlife Service Southeast Region’s Aquatic Nuisance Species Task Force. “Management and control is when it starts to cost money.”

Troxel says that the Lower Mississippi’s problems with nuisance species are likely not controllable; the system is just too large. Management plans for at least silver carp are being formulated in most Southeastern states; Louisiana’s is complete.

“The silver carp would not have a management plan if it hadn’t jumped out of the water,” Troxel muses.

One possible solution is to develop a commercial market for carp, which are a common food in many Asian countries. It remains to be seen whether the American public could ever find carp, traditionally relegated to the “trash fish” category, palatable.

“Maybe some people are trying to find markets,” says Boone. He and his colleagues recognize that commercial fishermen are efficient at reducing species populations when there is money to be made.

Killgore figures that nuisance populations will eventually control themselves: “Disease will have to take them out. High populations breed pathogens. It’s going to have to be natural.” ■

## Potential Commercial Use of Asian Carp

*Developing the invasive carp species as a viable and profitable catch for commercial fishermen could effectively help in controlling the fish populations. A place for the carp could ostensibly be found in pet food, a huge industry hungry for protein sources; sales of pet food, according to the Washington-based Pet Food Institute, in 2006 were \$15.1 billion.*

*Menhaden are caught in the Northern Gulf of Mexico in U.S. coastal waters; the schooling fish constitute the bulk of the fishmeal and fish oil production in the nation. Almost 300,000 metric tons of the fish were landed in 2006.*

*Asian carp would yield only a small fraction of that tonnage but it could supplement menhaden or, in the right entrepreneurial environment, be developed on its own, with fishermen and processors working in tandem to supply the meal and oil.*

*Several factors support the development of an exotic-species carp market. Among the benefits are:*

- 1. Reduces the Asian carp population in the Lower Mississippi River.*
- 2. Supports continued development of commercial fishing.*
- 3. The base production resource is free, already established and ripe for exploitation.*

*Natural resource-based economic development is a good fit for Asian carp since it is obvious*