Our Mississippi

PARTNERING TO KEEP
AMERICA'S RIVER GREAT

WINTER '13

PHOTO: DUANE DENNISTON.

Battling Drought

Multi-pronged campaign aims to keep barge traffic rolling

MAJ. GEN. JOHN PEABODY has been hoarding raindrops.

As commander of the Mississippi Valley Division, he's been storing them in Mississippi River reservoirs from Northern Minnesota down to St. Louis., then ordering their strategic release to boost river levels where and when needed most—currently, a 180-mile stretch between St. Louis and Cairo, Ill.

In December, his division's St. Louis District hired contractors to first scoop, then blast the sharp pinnacles of river rock impeding barge traffic.

ABOVE: ***A drought equal to or worse than any in the last 50 years has reduced flows on the Mississippi River, creating sandbars, uncovering the occasional historic treasure and making navigation particularly tricky for barges carrying goods on the nationally critical water highway.***

Corps and private dredges, as many as 24 at a time, have worked around the clock to keep the economic thoroughfare deep enough to move billions in goods each month.

In the long run, though, even a multi-pronged campaign can only do so much without what's really needed: rain.

"The drought and low water challenge can only be addressed as a long-term campaign, not a temporary emergency," Gen. Peabody said.

"The current situation is due to a persistent lack of rain, which limits the Corps management options and can only be solved by more precipitation. While the nation's investment in river improvements by the Corps has increased river channel efficiency, reduced dredging, improved flood risk management and enhanced environmental purposes, there is no appropriation or authorization that can guarantee the weather, be it too much or too little rain."

Too little rain looks to be the issue for some time to come, according to Jack Boston, an AccuWeather meteorologist specializing in long-range forecasts. Winter storms are expected, for the most part, to form in the southern part of the U.S. and move up through the eastern states, leaving below-normal precipitation around St. Louis, Mo., where low water concerns are centered. Above St. Louis, the lock and dam system helps regulate water depths, and northern stretches close to barge traffic come winter. But in the middle stretch, Mother Nature is particularly critical, and she has served

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Our Mississippi is a quarterly newsletter of the U.S. Army Corps of Engineers about its work in the Mississippi River Basin. It is published in cooperation with other state and federal agencies and other river interests with whom the Corps collaborates and partners toward long-term sustainability of the economic uses and ecological integrity of the river system.

Collaboration along the river, PAGES 4–5

LEFT: ***Both the river's depth and width decrease during drought, creating close quarters for the navigation industry.*** ABOVE: ***Low waters this fall revealed the USS* Inaugural*, a World War II minesweeper that once served as a docked museum. The boat was torn from its moored location near the St. Louis Arch during the 1993 flood. It crashed into a bridge and sank, not to be seen until September 2012. Elsewhere, the drought is revealing other wrecks, particularly of steamboats. Experts think some 500–700 old steamboats lie along the Mississippi, a similar number at the river bottoms of the Missouri.***

up the most persistent Mississippi River drought since before the system was completed in the 1930s.

"It's unbelievable how low the river is," Boston said. "It's 25 feet below flood stage at Cape Girardeau. It's going to take a lot of rain to bring river levels up to normal."

Lack of rain is the major problem—both on the river itself and on the tributaries that feed it. Between June 1 and Dec. 27, 2012, St. Louis had received 15.33 inches of rain, compared to the normal average of 24.25 inches. Cape Girardeau, Mo., has had 16.45 inches of rain, compared to the typical 25.32. Davenport, Iowa, has had 17 inches; normal is 23. Even those few inches of rainfall difference can mean a frightening state of affairs for shippers and industries that depend on the river.

For a time, shippers feared the worst—a temporary river shutdown. That, according to one study by the American Waterways Operators, would have delayed the delivery of $7.2 billion worth of cargo and caused the potential loss of thousands of jobs.

Low water has narrowed navigable river channels… and also forced lighter loads.

Low water has narrowed navigable river channels, said Marty Hettel, senior manager of bulk sales for the St. Louis–based AEP River Operations, and also forced lighter loads.

For much of December, efficiencies were cut by half, he said. One barge tow he rode from St. Louis to Cairo was loaded at between 21,000 and 22,000 tons, while the same boat in normal conditions would have been moving 50,000 tons.

Consumers could feel the effects of a river drought with the potential rising price of food, oil, chemicals and other commodities used in consumer products, though there has been little reported impact on prices so far.

Farmers have shouldered the brunt of the economic impact, says Mike Steenhoek, executive director of the Soy Transportation Coalition. The drought first impeded farmers' ability to grow soybeans and other agricultural products; it's now impeding their ability to deliver them. That's a particular concern to soybean farmers, he said, since 80 percent of their exports are delivered between September and February. That's because demand drops once their South American competitors harvest in spring.

Many grain merchandisers and handlers have secured alternative transportation, usually rail, sometimes trucking. "Even though that's a pretty efficient mode of transportation, it's not as cost effective as a barge," he said. "That's certainly a concern now. Even if navigation is allowed to continue, you're seeing a number of barge companies and grain handlers being forced to load lighter."

The soybean industry was among several farm groups, governors and members of Congress that called on the President to expedite a Corps plan to blast the rocks impeding transportation near St. Louis and also force reservoir releases from the Missouri River, a key tributary.

Removing some troublesome ice age rock

Work to remove the limestone rock formations near Thebes, Ill., started in December—at least a month earlier than originally planned. The obstacles forced closure of the river for 27 days during the drought in the late 1980s.

This time, the Corps is removing 890 cubic yards of rock to aid navigation by removing the pinnacles that impede barge traffic when the river depth reaches such unusual lows, said Mike Petersen, a spokesman for the Corps St. Louis District. Longer term, the Corps plans to remove an additional 6,000 cubic feet of rock.

Rock removal required the river to be closed to navigation for 16 hours a day, with traffic passing eight hours a night. The U.S Coast Guard deployed a mobile command center to the area to manage traffic and ensure safety on the Thebes reach of the river. By the time work was ready to resume each morning, the Coast Guard had cleared the vessel queues from the previous day's work. The first phase wrapped up earlier than anticipated. During removal efforts, the Corps worked with the U.S. Fish and Wildlife Service and the Missouri Department of Conservation to avoid and minimize impacts to the environment.

Dredging work has also been effective in keeping ports and harbors open. The Vicksburg District, for example, used $26.8 million in supplemental funds last year for port and harbor dredging; an additional $6 million has been budgeted for fiscal year 2013.

The Corps has no authority to release water from the Missouri reservoirs, said Leonard Hopkins, chief of the hydrologic and hydraulics branch for the Corps' St. Louis District. The Missouri is managing its projects for a 12-year drought, since a drought is not usually a single year event. A release from those reservoirs could affect drinking water supplies, fish and wildlife habitat and hydroelectric power.

Mississippi River releases, on the other hand, have been critical in keeping the river at its Congressionally-mandated depth.

On Dec. 15, the Corps began releasing water from Carlyle Lake in Illinois into the river. Other water has been trickling down from as far away as Northern Minnesota, where it was stored for two weeks in early November in six small reservoirs originally built in the late 1800s as aides to river navigation. Each year in late fall, those reservoirs are drawn down to make room for potential storage during spring floods.

"What was different this year was that when Gen. Peabody gave the direction to hold the water, he directed that the District hold any precipitation received over a 2- to 2½-week time period," said Patrick Moes, public affairs specialist for the St. Paul District. "He wanted us to hold water to be released at his direction to reduce the drought concerns downstream."

"We understand it's a team effort," he said. "When we look at the big picture, regrettably, we're suffering from the same drought as everyone else. There's not going to be an overnight solution to the problem." —K.S. & R.H.

FOR MORE

This National Weather Service link shows the daily river level at the St. Louis gauge, the point on the river where levels have been lowest: **tinyurl.com/agyx7d4**

The National Weather Service's Climate Prediction Center offers a regularly updated three-month precipitation forecast: **tinyurl.com/3do8g8**

The Corps' St. Louis District posts regular drought updates, including photos and video links: **mvs.usace.army.mil**

Niagara Falls are but a trickle compared to the massive waterfalls that once existed near present-day Commerce, Mo., at what's known as Thebes Gap. The rock pinnacles, making news for they way they're impeding navigation, were actually part of these falls, a spot where the river poured through a gap in a rock ledge and plunged into waters at the Gulf. That's the way retired river engineer Claude Strauser described them in an article (excerpted below) originally published in the Corps publication, Esprit, *in 2003.*

Mystery of the rock pinnacles

THE FALLS AT NIAGARA ARE ONLY 180 FEET HIGH. The falls located below Thebes Gap were over 285 feet high. Just south of Cape Girardeau is a perfectly flat area, wide enough to be an old riverbed. Here the Mississippi River took a sharp right turn, and spilled out across the Missouri Boot Heel, between present day cities of Advance and Poplar Bluff.

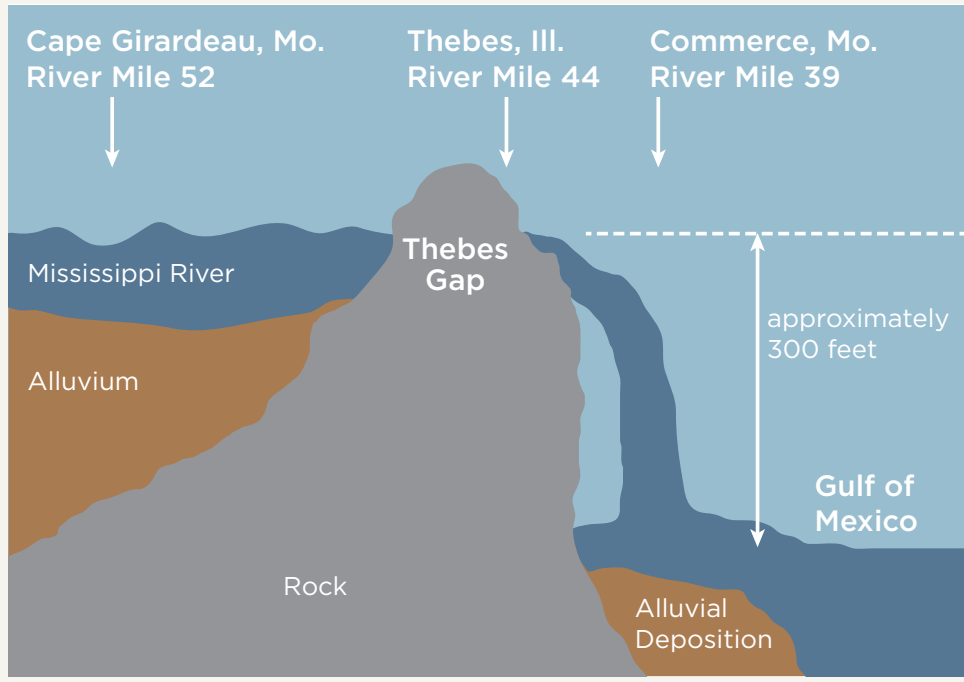
What broke the "Thebes Gap" and let the Mississippi make its way past the present Commerce and on to Cairo, Ill.? It was likely a combination of natural evolution and a big earthquake or two. When the Mississippi is low at Thebes, cracks in the rocks have a consistent direction that seems to match the theory of a big shake.

Civil engineer Charles Ellet Jr., in his 1853 report entitled "The Mississippi and Ohio Rivers" writes the following: "The elevation of the low water surface of the Mississippi, between Commerce and Cape Girardeau, is 285 feet above the level of the ocean, and if the present level of the sea ever extended up to that point, the Mississippi must then and there have precipitated its waters over a ledge 285 feet high.

It follows, therefore, that if, at the period when the formation of the delta may be supposed to have commenced, the level of these rocky hills (Thebes Gap) and the level of the ocean were the same as they are now, then there must have been, as before stated, a cataract, or rapid above the mouth of the Ohio with a fall of 285 feet at low water, or nearly double the actual height of Niagara Falls.

In the course of time, the sea must have been filled up by the sediment brought down by the Mississippi River, and the Mississippi has thus gradually risen upon the bed formed by its own deposits." So concluded Ellet.

So if by some quirk of fate and history, either people had lived millions of years ago or the geological events of the region were shifted to present days, people might be honeymooning at the "Mississippi Falls" in Missouri and Illinois versus New York's Niagara Falls. — CLAUDE STRAUSER



LEFT: ***Contractors load a spud barge near Thebes, Ill., during efforts to blast 890 cubic yards of limestone from the Mississippi River navigation channel.***
ABOVE: ***Geologists say that in ancient times, the pinnacles were part of a massive waterfall that fell at twice the height of Niagara Falls from the river into the Gulf of Mexico.***

Claude N. Strauser is a retired chief of the Hydrologic and Hydraulic Branch of the St. Louis District Corps of Engineers. While there, he was credited with the creation of a new field, environmental river engineering, that included innovations like notched dikes, bendway weirs, chevrons and other structures designed to help keep the navigation channel self-regulating and also help aquatic species. Those structures have, among other things, dramatically reduced the need for dredging to keep the river channel open for navigation.

Drought effects on fish minimal—for now

Through winter, the Mississippi River drought should not have a major effect on endangered fish like the pallid sturgeon, says Dr. Jack Killgore, research fisheries biologist with the U.S. Army Corps of Engineers' Engineer Research and Development Center in Vicksburg, Miss. That could change if the drought persists into the spring spawning season, reducing availability of flooded gravel bars and rearing areas.

In the meantime, there are some fish winners—particularly larger sports fish enjoying the benefits of easily caught prey trapped in isolated pools—and the dreaded Asian carp. Generally, there's such an abundant amount of main channel habitat, Killgore said, that even at low water, fish tend to do about the same.

The biggest issue of concern is potential entrainment into towboat propellers, he said. When the channel is even 12 feet deep (and estimates have channel depths, in some spots, far lower), the bottom of the propeller is in 10 or 11 feet of water, making it more difficult for endangered fish like sturgeon to avoid contact—something shown to be an issue in a towboat study on the Upper Mississippi. No similar studies have been done on the open river stretches of the Lower Mississippi, he said. Since the river is so much larger, that theory remains conjecture.

Early in a drought, species like catfish and bass should do well. Later, the advantage goes to species like the gar and Asian carp, both of which can cope well with low levels of dissolved oxygen. "That's the scary part," Killgore says. "When water reconnects the main river to the backwaters, all those Asian carp will be flushed back into the Mississippi River with debris providing them an abundant supply of nutrients." —K.S.

ABOVE: ***Angie Rodgers of the U.S. Fish and Wildlife Service, also Assistant Coordinator of the Lower Mississippi River Conservation Committee, holds a federally endangered pallid sturgeon.***

PHOTOS: U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT

Leading the Vision

Harald "Jordy" Jordahl started Jan. 7 as the executive director of America's Great Watershed Initiative, a multi-organization partnership that evolved out of the U.S. Army Corps of Engineers' 200-year vision for shared watershed management.

You're the newly appointed and singular full-time staff person for America's Great Watershed Initiative. What does the creation of your position represent for this initiative?
Commitment to action. Commitment to taking the next steps to making an effective and enduring collaboration work.

How do you see yourself spending your first few months on the job?
Meeting with many key people, organizations and businesses and listening and learning about their ideas, concerns and interests. And working to share information about the diverse collection of groups in the AGWI steering committee – navigation, flood risk management, conservation, agriculture, local and state governments, private businesses. It's critical to include and hear from people throughout the watershed as we work together to meet the region's needs.

Talk just a bit about your background and how it led you to this position.
I have worked on resource policy issues in appointed positions, as an agency administrator and as an advocate. I have worked closely with local governments, Wisconsin's tribal governments, state and federal agencies and private organizations and have seen effective collaborations and fights where groups haven't been able to work together. Most important, I have learned that large landscapes have many communities, businesses, organizations who have real and critically important needs.

You have a family heritage of conservation. Your father, Harold "Bud" Jordahl, helped to establish the first Earth Day in the 1970s. How did that upbringing affect your views on the importance of conservation and collaboration?
It was critical. But what was not emphasized in my dad's press bio is that he also ran the Wisconsin Department of Resource Development and had a key policy role in the U.S. Department of Commerce back in the 1960s. He worked with the complicated issues of natural resources management and conservation along with community development. He always talked about the time and hard work it took to make the connections and collaborations needed to make long lasting progress. He emphasized that progress was often measured in decades and that the most successful projects were accomplished by many people working together.

What was your first connection to the Mississippi or its watershed?
My favorite place on earth is an old abandoned dairy farm in the Driftless region of Wisconsin that my parents bought over four decades ago. It was badly eroded and worn out, but my parents – with labor from kids and friends – worked with the USDA, state and county staff to restore the farmland, protect the watershed and improve the forests. Now it's a productive and healthy farm and forest. It's also a great place to hunt deer or make maple syrup with my kids.

How about today?
Over the last 20 years, I have become a passionate duck hunter in Pool 9 near DeSoto, Wis.—a place my dad first introduced me to. I navigate through the slough in the dark to my preferred island using the lights on a power generating station as a guide and, with sunrise, I face a bluff prairie natural area on one bank and see the corn and soybean fields on the ridges on the other side. As morning develops, I hear the trains and see the barges working in the channel, and I hear the fire whistle announce noon in Lansing, Iowa. On a good day, my family will see tens of thousands of ducks, geese, swans, pelicans and eagles. We share our slough with commercial fishermen, trappers and anglers looking for late season walleyes. I am always amazed at the diversity in the small part of the river I experience—recreation, commerce, community, and conservation.

What are the biggest challenges of AGWI?
Among almost every sector, demand is increasing, and consider that by 2050, the world's population is expected to grow to 9 billion. An increasing need for food will require more water and escalate the need to keep nutrients on fields and out of streams that eventually lead to the Gulf of Mexico. Industrial and municipal use will increase. And these increasing demands are happening in a time of uncertainty – a time of more frequent and even historic floods and droughts that threaten communities and commerce. And, of course, our infrastructure is aging and in dire need of repair, but seemingly the one thing decreasing is our budget!

And the greatest opportunities?
I think that the biggest opportunity is the realization shared by people at the summit and in communities throughout the basin that the old answers and solutions are not meeting today's and tomorrow's challenges. Just look at the 2011 flooding followed by drought in 2012 and the problems these events caused. We don't know what will happen in 2013 and beyond, but a lot of people realize we need to work together to create a more resilient system to meet these challenges we face.

Marching ahead with plans for a more sustainable river

SOME 50 REPRESENTATIVES of industry, government, academia and private organizations have pledged to actively participate in America's Great Watershed Initiative, a public-private organization working toward a more integrated management of the Mississippi River Watershed.

That was just one outcome of a late September summit in St. Louis, Mo., which also resulted in the hiring of a full-time staff member for the group, Harald (Jordy) Jordahl (see accompanying interview). Another outcome was the plan to develop a report card that measures progress toward achieving system-wide river health and elevate promising local and regional projects.

More than 180 people from 24 states and 95 organizations came together at the summit. While it's ambitious to expect groups with sometimes conflicting interests to work for the greater good, steering committee member Steve Mathies is more enthusiastic than ever.

"I'm convinced that as people, we don't want to do anything to damage anyone else," said Mathies, a New Orleans-based expert on coastal restoration. "We're usually just too busy on the problem in front of us. This lets us raise our heads up and look at the watershed as a whole and 100 years down the road, what our needs will be and how we're going to get there." —K.S.

FOR MORE on the summit: tinyurl.com/ap8jcul

MY MISSISSIPPI

Patrick Moore, 53, Executive Director, CURE (Clean Up the River Environment), Montevideo, Minn.

"I grew up living at Fort Snelling at the confluence of the Mississippi and Minnesota River. I could step out my back door, right down into the floodplain. I have strong memories of swinging from vines, fishing and skipping stones in the Mississippi. I would say the rivers have been a continuum that's run though my life.

"When you work for a watershed organization, you become aware of upstream/downstream relationships. It became clear that we needed to let the people of the Mississippi River know there are people on the Minnesota who also know and care.

"We initiated Friendship Tours to work with downstream allies and other stakeholders in the Lake Pepin region to engage casual, relationship-building conversation aimed at reducing agricultural runoff in the Minnesota River that is contributing to the silting in of Lake Pepin. Those challenging discussions create more watershed consciousness, more awareness throughout the state.

"The people who fish, hunt, bird watch and get out on the river are the ones who have the passion; they're the ones who'll still be here when the government programs go away." —T.W.

FOR MORE: curemnriver.org.

SHARING SCIENCE

International collaborations help the Mississippi in surprising ways

YAO YIN ROSE AT 5 A.M. one still-dark morning to head out in a Mississippi River fishing boat. He caught some northern pike. So did his companion, a fisheries manager for the Yangtze River half a world away. The companion's 33-incher put up quite a fight, and the successful catch left just the impression Yin was hoping for on this scientific diplomatic mission of sorts.

"Wow," the Chinese scientist shouted while posing with his trophy fish. "This is great! You have fish people can catch for fun!"

It's harder to explain in words than experience the value of keeping a river pure for recreation, fishing and drinking," says Yin, who leads Asia Strategy for The Nature Conservancy's Great River Partnership. That's especially true, he says, in the wake of China's industrial explosion and focus on the use of the Yangtze for hydropower and navigation.

> "When we talk to each other, good things happen."
>
> —YAO YIN

Yangtze Fishery representative, Yimin Zhao

The fishing companion and three other Chinese scientists spent a month along the river this past summer, working much of the time with scientists from the U.S. Army Corps of Engineers and partner agencies. The visitors also were struck by the idea of fish passage in dams, pioneered at the Corps' Engineer Research and Development Center, and the strong environmental awareness of U.S. Children," said Yin, who spent his early years along a tributary of the Yangtze. That observation's prompting the strengthening of China's environmental education curriculum.

"They wanted to learn how here the river has many, many values to society," Yin said. "And they wanted to know how we manage the conflicts. That was their purpose in coming here."

The Yangtze partnership—one of a growing number of collaborations between the Corps and Mississippi River partners and those managing other rivers around the world has been a win-win and by no means a one-way learning experience, Yin and others say.

One area of interest, with potential, is the Upper Mississippi River Restoration-Environmental Management Program, a Corps-managed partnership of several federal agencies and states, created in 1986. The program pioneered large-scale scientific monitoring and ecosystem restoration methods, and China is now following similar monitoring protocol. Having comparable data for the Yangtze and other major world rivers would be of great scientific value, says Dr. John Chick, field station director of the National Great Rivers Research and Education Center.

The Chinese scientists have in turn shared their innovations in water quality monitoring and, most promisingly, about Asian carp—here, a dreaded invasive species, there such an endangered delicacy that scientists are looking at ways to strengthen the population.

Chinese scientists have done extensive research on weak spots in the growth cycle, for example, knowledge that could lead U.S. scientists to ways they could ingest chemicals or find other ways to kill the fish or stop reproduction," Yin said.

Another, and growing, collaboration has been cemented between the Mississippi River Commission and the Mekong River Commission. In July, representatives of the Mississippi hosted a delegation from the Mekong interested in how public and private partnerships could be used as an economic tool. They studied examples at the U.S. Army Corps complex that houses both the Melvin Price Locks and Dam and Riverlands Migratory Bird Sanctuary. The Corps-owned land also includes a birding center run by the National Audubon Society and research laboratory headed by a local college.

Most key is the fact that the scientists from Asia, the U.S. and elsewhere, now friends, can pick up the phone and ask each other any river-related questions, Yin said.

"When we talk to each other," he said. "Good things happen." —K.S.

FOR MORE on the Upper Mississippi River Restoration–Environmental Management Program: tinyurl.com/aqr3uul

Non-profit partners key to keeping Corps-run recreation areas

ABOVE: ***Lake Ouachita***

Campers who flock to Arkansas's scenic Lake Ouachita each year, many to pitch a tent along a clear mountain lake notable for its some 200 islands, have likely taken little notice of a recent change in who collects their camping fees. What they will likely notice, though, is the campground improvements that the change will soon bring.

A relatively new method of operation, called Cooperative Agreements, allows for the U.S. Army Corps of Engineers to partner with non-profit organizations for the operation and maintenance of recreation areas. If a non-profit collects the fees, those funds can be channeled directly back to the particular campground or recreation areas as opposed to the cash-strapped federal general fund. This benefits both campers and surrounding communities dependent on that visitor spending, says Greg Raimondo, Public Affairs Chief for the Corps' Vicksburg District.

"The idea is that through these kinds of partnerships, we're preserving the opportunity for people to enjoy these lakes," he said. "Without these outside partnerships, we might have to close campgrounds or restrict the time they'd be available throughout the year."

Through a pilot program at Lake Ouachita, fees at two of the 20 recreation areas are now collected by the non-profit group, Friends of Lake Ouachita. The Corps first partnered with the group in the management of the 74-site Crystal Springs campground, which also boasts a boat launch and day use area, then added a second recreation area—77-site Tompkins Bend—to the program in early November.

The collected fees are being used this winter to build a new playground at Crystal Springs and to combine some individual sites into a group campground area long requested by frequent campers, said Rick Dwyer, the Deputy Project Manager, Ouachita Project Management Office. Similar improvements will likely be made at Tompkins Bend. This fall, the Corps and Friends group will meet to determine if other Corps-run recreation areas on the lake should be similarly managed, Dwyer said.

The cooperative agreements are a win-win, he said. The non-profit takes care of minor maintenance, the Corps anything major. "If we have a big water leak or something, we take care of that. If a toilet broke or something, we'd replace that."

Lake Ouachita is one of 27 recreation complexes managed by the Corps' Vicksburg District. It was originally built between 1946 and 1954 as part of a flood control and hydropower project but evolved to include recreation, water supply and fish and wildlife management as parts of its mission.

Last year, approximately 4 million people visited the project near Hot Springs, Ark., to explore its 20,000 acres of public land, camp in one of its 1,100 campsites or use one of the 18 Corps-run boat ramps. Boating, fishing, scuba diving and island camping are especially popular. According to a recent study, visitors to Corps sites spent $18.62 million within 30 miles of the project, with 62 percent of that funneled into the local economy. —K.S.

IF YOU GO:
Camping is available on Lake Ouachita's 200 islands, but "Leave no Trace" rules apply; if you carry it in, carry it out, and protect water sources from contamination by using only biodegradable soaps. To reserve a site in Class A camping areas ($10-20 night), visit recreation.gov.

Theodore Roosevelt (IV) takes to the river

Great-grandson of nation's famed "Conservation President" sees visits to the Mississippi River and other public lands as key to a new conservation constituency.

ABOVE, FROM LEFT: ***Theodore Roosevelt IV displays one of many fossils found on his river trip led by the U.S. Army Corps of Engineers, Lower Mississippi River Conservation Committee and others. The group explored both river banks and the main channel, where sampling revealed several varieties of fish.***

Ted Roosevelt IV first experienced the Mississippi River while driving across the country to an early-career job in Wyoming.

A conservationist in the vein of his famous great-grandfather, Roosevelt was a teen when he and a buddy first crossed a bridge over the storied river, pulled the car to a halt and broke through brush to get to the river's edge.

"We had to get down; we had to see this big brown muddy thing," he said. "We stood on the edge of the banks, and you could see its power."

Today, he believes there's power in getting more people, young and old, of every ethnicity and income group, to experience the river—a key step toward the creation of a 21ST-century conservation constituency.

"We need to let people see it and connect with their roots and history in the same way we want to get Americans out to visit our National Parks—Glacier, Yellowstone, the Grand Canyon," he said. "We need to know what our heritage is to act as responsible stewards and to pass this on to the next generation."

The Roosevelt family has one of the more famous generational links to the river, or at least its watershed. It was during a 1902 Mississippi hunting trip that then-President Teddy Roosevelt opted not to shoot a black bear that had been unsportingly tied to a tree by a hunting guide. The event would have been forgotten if not for one of American history's most famous political cartoons, capturing the event and the political overtones in Roosevelt's opposition to the Jim Crow laws of the time. A resourceful toymaker marketed the "Teddy" Bear.

> "We need to let people see [the river] and connect with their roots and history in the same way we want to get Americans out to visit our National Parks..." —TED ROOSEVELT IV

As part of that legacy, Roosevelt IV was invited to speak at the inaugural Great Bear Affair in Rolling Fork, Miss., a festival founded to commemorate the century-old hunt and work to help the region's bears. He was impressed, he said, by the excitement of those in the region about the bear population's rebound and hopes for more urban Americans to similarly say, "Isn't that great?!"

One of our pressing environmental issues, he says, is the need for more Americans to experience our "great bequest" of public lands. His great-grandfather, alone, established five national parks and put more than 200 million acres under federal protection.

A national service requirement, with an option that includes work on public lands, is one possibility, but so is encouraging people to set out with a backpack, horse, or in the case of the Mississippi, a boat, to just explore and connect.

His thinking that the Mississippi River should be high on both a national recreation and conservation agenda was cemented on a recent personal river trip—his first ever on the Mississippi—and sponsored by what he called an impressive collaboration of groups that included the U.S. Army Corps of Engineers, Lower Mississippi River Conservation Committee (lmrcc.org) and U.S. Fish and Wildlife Service. On the outing, the group walked the fossil-rich gravel river banks, viewed engineering measures that connect the main river with side channels for the benefit of fish and examined the fish themselves—gar, paddlefish, sturgeon, catfish and drum.

"We were pleased to showcase our cooperative efforts for the restoration of the Mississippi," said Angie Rodgers of the Lower Mississippi River Conservation Committee. "We wanted to show Mr. Roosevelt that the river has many values."

Roosevelt says he was surprised by how undeveloped and alive the river was, despite the barge traffic on this major economic thoroughfare. The experience he called "riveting" also further enhanced his thinking that more young people should have a similar opportunity. Even more than his family's conservation heritage, it was a childhood love of the outdoors that inspired his personal passion for the environment, he said.

An investment banker by day, he serves on the board of C2ED (Center for Climate and Energy Solutions), a successor to the Pew Center on Climate Change. He's similarly active in other conservation issues.

What he most admired about his great-grandfather is something the former Navy Seal says he'll emulate on a Lower Mississippi River paddling trip that he's planning with his wife and adventurous friends.

"He was so talented in many different areas, but I think I probably admire most of all his enthusiasm for life .... There's a great lesson for all of us. Let's enjoy life. Let's engage. Let's do things. That to me is a great lesson the old lion has for us." —K.S.

FOR MORE:
Video interview with Theodore Roosevelt IV, filmed by the Lower Mississippi River Conservation Committee, about his recent Mississippi River trip: youtube.com/watch?v=KsapXCHCKkU

EXCERPT from "In the Louisiana Canebrakes, 1908," by Theodore Roosevelt, about his second (this one successful) hunt for a black bear:

"Our first camp was on Tensas Bayou. This is in the heart of the great alluvial bottom-land created during the countless ages through which the mighty Mississippi has poured out of the heart of the continent... There is no richer soil in all the earth; and when, as will soon be the case, the chances of disaster from flood are over, I believe the whole land will be cultivated and densely peopled. At present, the possibility of such flood is a terrible deterrent to settlement, for when the Father of Waters breaks his boundaries he turns the country for a breadth of eighty miles into one broad river, the plantations throughout all this vast extent being from five to twenty feet under water ..."

READ THE ENTIRE ESSAY: OURMISSISSIPPI.ORG

This drawing depicts 26th president Theodore Roosevelt's fabled 1902 Louisiana bear hunt on which he famously refused to shoot a bear tethered to a tree under "true sportsmen's code." The Washington Post documented in the editorial cartoon, "Drawing the Line in Mississippi." Soon after, Brooklyn toy owners started marketing stuffed animals as Teddy Bears.

‘Life purpose’ leads to coveted seat on Mississippi River Commission

When the voice on her cell phone claimed to be from the White House, Norma Jean Mattei thought it was a joke. But an aide to Barack Obama assured the acclaimed civil engineer that the President had indeed nominated her to serve on the Mississippi River Commission, the 134-year-old board that, until now, has had no civilian women.

At 52, she did not hesitate to accept the nine-year appointment. The commission works with the Army Corps of Engineers to manage the river that winds through the heart of New Orleans, her birth city and chosen home. It is a river whose massive flooding after Hurricane Katrina in 2005 transformed her view of her life’s purpose.

“As a professional engineer,” she says, “my first duty is to maintain the health, safety and welfare of the public. The Mississippi River levees protect lives and property all along the river, but anyone who has stood on the Moon Walk in the French Quarter of New Orleans can understand just how important flood control is to my hometown. Here you can view ocean-going ships pass at eye level, but turn around and you look down into Jackson Square and other famous tourist sites.”

Norma Jean is the oldest of seven in a deeply Catholic family that has lived in New Orleans for more than a century. Her parents, “rich only in children,” would occasionally take their kids for a free ferry ride across the river. “No, we didn’t fish in the river, we didn’t swim in the river,” she chuckles. “We knew it wasn’t safe. People who do that in New Orleans tend to end up in the news, and not in a good way.”

She chose engineering because her dad worked for a utility company but had never finished his engineering degree. She remembers sitting happily on his lap at his drafting table. Her stay-at-home mother “never had a vacation day in her life.” Norma Jean won a National Merit Scholarship that paid for her undergraduate education at Tulane University in New Orleans. But after almost a decade at several firms, bridges and interchanges, railroad yards, docks, streets, a landfill and even a prison, Norma Jean realized that kind of work left too little time for family.

After a Ph.D. at Tulane, she took a job teaching at Louisiana State University, later moving to the nearer-to-family University of New Orleans, where she has taught since 1995. She has worked hard for diversity in engineering, especially to increase the number of women students and improve their satisfaction with a profession still largely white and male. Both of her daughters plan engineering careers, and the oldest is already one of her mother’s students at UNO.

Norma Jean was the first woman Ph.D. in her program at Tulane, the second woman at her first firm, the first woman at her second firm, the first female (although interim) dean of engineering at UNO and the first female civil engineering department chair at UNO, her current position, before becoming the first civilian woman on the seven-member Mississippi River Commission. She shrugs off her trail-blazing, saying the best part “is you rarely have to stand in line in the ladies’ room.”

Hurricane Katrina dumped the Mississippi River into Norma Jean’s life. Although no one in her family was hurt, her parents lived in a FEMA trailer for a year while their lifelong home was gutted and restored. She and her husband and daughters lived away from home for six weeks, and she taught classes from borrowed space on another campus, “conducting office hours from the trunk of my car.”

“Before Katrina,” she says, “I’d always shake my head and say, ‘Somebody’s gotta do something about that.’ Katrina made me realize if it’s really important to me, the person who should be doing something is me. It was a turning point in my life.”

Norma Jean Mattei

After Katrina she did dozens of pro-bono structural assessments of damaged homes. “I wouldn’t write up a report for an insurance company, but I could at least crawl under the house, crawl into the attic and tell somebody, ‘Your house is sound, and you just have to gut it,’ or ‘It’s not worth it; there’s too much damage.’” She advised one couple, in a conversation aired by National Public Radio, that it might cost them $60,000 to raise the floor of their home by three feet to qualify for flood insurance. The NPR host ended the segment with these words: “The (family) told her they’re not likely to embark soon on a $60,000 project. They did, however, invite her to a party at their house this weekend.”

Serving on the national board of the American Society of Civil Engineers, she has worked with other professionals to assess damage after other major disasters, such as the tsunami in Japan or the New Zealand earthquake, and to propose new design standards that might limit damage the next time.

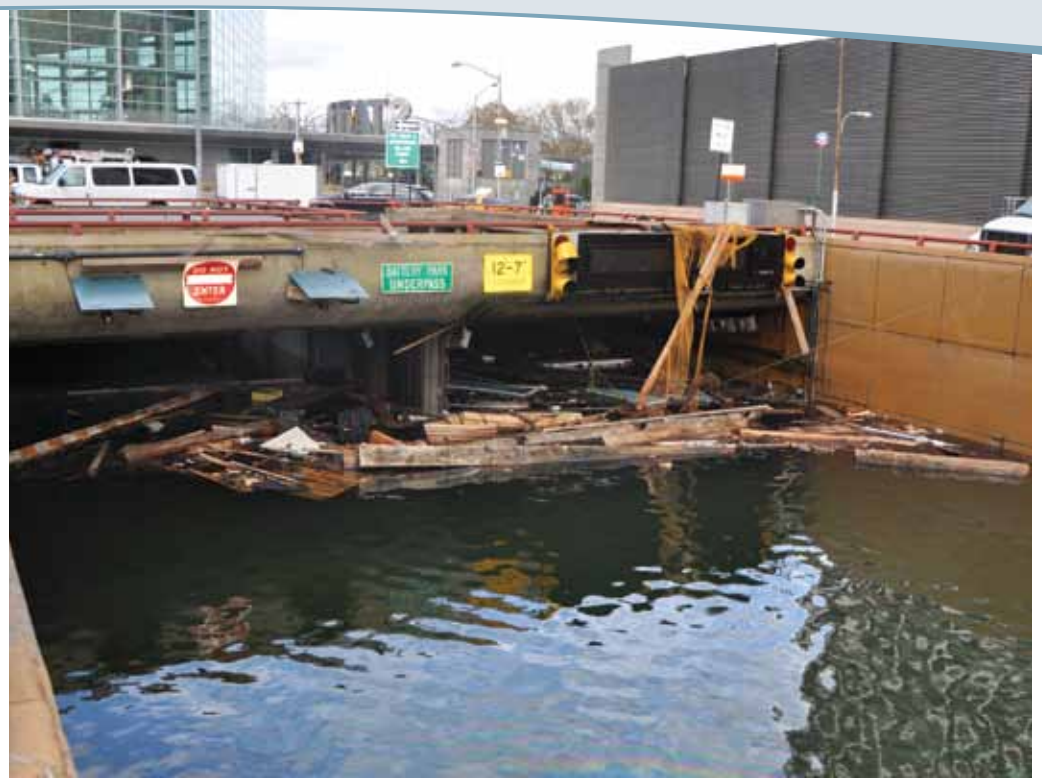
She is gratified to have been called to a new role on a commission that helps manage her hometown river. “This is an instance when I can make an impact,” she says. “The river is a big player when considering the economic health of the country. But what I find most exciting is the role the Commission can play in coastal restoration. I cannot help but believe the mouth of the river can be managed in a clever way that will at least minimize the negative impact on the Southeast Gulf Coast.

“Let’s ask ourselves: How can we do things better, all around?”

—S.A.

FOR MORE about the commission and its storied history: mvd.usace.army.mil.

DID YOU KNOW? The Lower Mississippi River is supporting a population of the endangered interior least tern, well above recovery plan goals for the species. Those conducting a 2012 population survey found more than 10,000 of the endangered birds on the lower river.



“Unwatering team” applied Katrina lessons to flooded NYC subways

Roughly five hours before the largest Atlantic hurricane on record made landfall along New York City, Rock Island District engineer Roger Less got word he was being sent to Manhattan to provide technical advice in dealing with storm surge waters.

He was to leave the next day with colleagues Roger Perk, Jim Bartek and John Behrens—all part of a group dubbed the Unwatering Team after they helped remove some 250 billion gallons of water from New Orleans, flooded by Hurricane Katrina.

Only when they were sent by military aircraft, met by police escort and driven at speeds of up to 90 mph into the city, did Less and his colleagues get their first hint that expectations post–Hurricane Sandy were especially high. In fact, New York Gov. Andrew Cuomo had already made a televised statement that the Corps’ “best national team, the national unwatering SWAT team”—was on its way.

The next morning, he was asked to do an interview with the “Today Show” host waiting outside the trailer. BBC and NPR followed.

Less, chief of the Corps’ Rock Island District’s design branch and senior project manager for the unwatering work, was one of some 80 employees from the Mississippi Valley Division eventually sent to provide technical expertise in the wake of Hurricane Sandy. Some were part of official response teams, regularly deployed during emergencies to help with debris removal, emergency housing, power restoration or other key recovery missions. The less official and oddly named “unwatering” team got attention for what was at stake: New York City’s critical, flooded, transit system. Some 70 percent of the city’s 1.6 million commuters use the subway system daily to and from Manhattan, and officials wanted it up and moving—fast.

Their first evening in the city, the team scoped the problem in the dark. Via flashlights, they determined they were at least dealing with water in the millions of gallons, not billions as with Katrina. But rather than spread out across the landscape, as with bowl-shaped New Orleans, the New York City floodwater was concentrated in deep, narrow passages like subway tunnels with limited entrance options and the World Trade Center grounds, in some parts seven stories deep.

“It wasn’t surface water flooding, it was underground infrastructure flooding that was a little harder to get to,” Less said, comparing it to New Orleans. “From that standpoint, there was a whole different set of pump resources we’d apply. Other than that, we used the same hydrological principles. Water trapped below sea level needs intervention to help get it out.”

An advantage over the Hurricane Katrina cleanup was that they found no structural breaches that would have river or harbor water pouring directly into tunnels. Local officials had also cleared them of cars and people prior to landfall.

The Corps of Engineers established a Joint Task Force to provide command and control of the unwatering mission. Led by commanders from the Mississippi Valley, Rock Island, St. Louis and Memphis districts, it drew on the local expertise of New York District employees and collaborating city and state agencies.

“It’s not rocket science; water flows downhill, and if it doesn’t, you have to pump it out,” said Denny Lundberg, one command and control team member. “But events like this are incredibly intense and require experience in crisis management. Katrina provided us valuable experience on how to organize and execute an unwatering mission in a major urban area. Kevin Wagner and Mark Gonski from the New Orleans District were also part of the task force and provided valuable first-hand accounts of the unwatering requirements from Katrina.”

Working with the Navy and one of its key contractors, New York City and Port Authority transit officials, the team was able to start pumping their second full day in the city, setting up pumps of various sizes and moving water, via flexible hoses back into the New York Harbor. The pumps removed 116,000 gallons of saltwater per minute and drained the city’s subways and tunnels of 475 million gallons of saltwater in nine days. The success of this and other recovery operations was featured by TV host/comedian John Stewart in an episode dubbed “The Daily Show Tribute to Institutional Competence.”

But that didn’t mean the Corps’ work was done. Debris removal remains a critical task and will for several months, says Cynthia Constancio, an emergency management specialist with the Mississippi Valley Division. Her role with the New York City Office of Emergency Management includes tracking storm-related debris picked up by the Corps and other agencies: 1.54 million cubic yards as of Dec. 26, all sent to landfills, based on type. Treasures like a teak boardwalk, in pieces, that the New York City parks department wanted to re-use, had to be found and salvaged. Sand is being sifted and re-deposited on area beaches.

Jonathan Pennington, Emergency Manager for the Corps’ Vicksburg District, was assigned to coordinate mission assignments across the state of New York—21 categories of them including unwatering, debris removal, power restoration and long-term recovery when the efforts transitioned from response to recovery.

What stood out to him? The resiliency of New York and speed of the response.

“One thing I’m doing is a lot of paperwork cleanup, which isn’t sexy sounding,” he said. “But it looks like they cut the red tape to get stuff done. It makes the job harder for people like me, but that’s not important. As long as we were able to act as quickly as we could, respond as quickly as we did, it’s worth it.”

—K.S.

TOP, FROM LEFT: ***Hoses, shown here in one of the subway “unwatering” operations, were used to pump the storm surge waters out of subway tunnels and back into nearby harbors. Debris floats in a flooded New York City tunnel.*** ABOVE: ***Rock Island District employee Roger Less is interviewed by New York City media about the Unwatering Team.***

Operation Mussel Rescue

In August, biologists from the Minnesota and Wisconsin natural resources departments, the U.S. Army Corps of Engineers, the National Park Service and the U.S. Fish and Wildlife Service relocated a number of federally endangered mussels in St. Paul, Minn. at Pool 2 on the Upper Mississippi. Department of the Interior Secretary Ken Salazar stopped by to take a look and talk to biologists who are working to reestablish mussels in the river. He was joined by Gov. Mark Dayton and Minnesota DNR Commissioner Tom Landwehr. The relocation is part of an effort to restore species like the Higgins' eye pearlymussel into former habitat like Pool 2, where water quality and other factors that limited mussels in Pool 2 have improved.

Biologist Kevin Pigott is moving on his knees along a coffee-colored drainage ditch near Marked Tree, Ark., just south of the Arkansas/Missouri border. He lifts a square of PVC pipe over top of itself, like it's slowly tumbling across the river, and lays it on the bottom to create a simple grid—one box at a time. The square is called a quadrat and allows Kevin to sample a specific area during each sampling event.

He uses thick protective gloves and feels his way through the stream bottom contained within the quadrat for the now-familiar outline of a mussel shell—working to be sure every inch is covered. He and other members of a dive team from the U.S. Army Corps of Engineers and partner agencies then count and identify how many mussels are there and what species. They are mainly looking for the federally endangered *Potamilux capax* or fat pocketbook (so named for the way it resembles a tiny overstuffed purse.)

The drainage ditch needed deepening to help provide flood protection to the surrounding agricultural fields, one job of the U.S. Army Corps of Engineers. But that can't be done without considering the potential impacts to the nation's most endangered fauna.

Some 43 percent of the 300 known species of native freshwater mussels are in danger of becoming extinct.

These shiny-shelled critters with such whimsical names as pink mucket, winged mapleleaf, monkeyface and sheepnose are disappearing and with them favored food sources for mink, muskrats, otters, heron and egrets. They also qualify as one of the river's best natural water filters. As bottom dwellers, freshwater mussels filter algae, bacteria, even pesticides and heavy metals from the water; according to one report, a single mussel filters more than a gallon of water a day.

"A lot of communities depend on rivers for drinking water and a lot of people have recreational contact with the river, as in swimming and fishing," Pigott says. "It's prudent for us to preserve mussels for the health of the water system."

Use your muscle to help some mussels

Anyone willing to get a little wet and muddy can join an event to help save one of the most endangered creatures of the Mississippi River watershed, says U.S. Army Corps of Engineers fisheries/mussel biologist Dan Kelner. Volunteers (divers and those just willing to muck around in a river) can help collect native mussels and clean dangerous zebra mussels off their shells, among other things. Various agencies use volunteers, too, in surveys and in efforts to relocate mussels during water drawdowns or to reintroduce them into their historic native habitat where they have been eliminated.

LEARN MORE: CONTACT DANIEL KELNER AT 651-290-5277 OR DANIEL.E.KELNER@USACE.ARMY.MIL.

PHOTOS, PAGE 8: CHRIS GARDNER, U.S. ARMY CORPS OF ENGINEERS

Historic threats

In the case of freshwater mussels, threats are not culinary in nature. While saltwater mussels are a delicacy often served along with fresh pasta, the freshwater variety were perhaps last eaten in any quantity many centuries ago by Native Americans, who didn't pass along the recipes, says Mark Smith, the environmental compliance section chief and mussel expert with the Corps' Memphis District. Civil War accounts talk of troops trying to boil them, grill them, stew them—and still finding them inedible.

Mussel populations, including those in the Mississippi River, were instead threatened first by fashion and later by river pollution, development and drought. Back in the late 1890s, freshwater mussel pearls were in such high demand for jewelry that historians have compared mussel fever to the California gold rush. That was compounded by the pioneering work of German button maker Johann Bopple who, in 1889, started using American freshwater mussel shells for buttons. At one point, 60 factories were harvesting 21,000 tons of shells near Muscatine, Iowa (today, home to the Pearl Button Museum, muscatinehistory.org). The U.S. Bureau of Fisheries tried to stop the steep mussel decline in 1914 by setting up a biological station to create cultured freshwater pearls. But it wasn't enough.

In addition to over-harvesting, pollutants from large city sewers had a devastating impact on all aquatic species, including freshwater mussels, prior to modern sewage treatment plants. Impoundments and more recently invasive zebra mussels further decimated the populations. The non-native zebra mussel attaches to freshwater shells by the hundreds and can prevent the native mussel from filtering water and successfully reproducing. Changes to river hydrology from lock and dam construction also played a role in population declines by changing flowing areas into more lake-like habitats, which impact both mussels and "host fish" like the skipjack herring. The mussels propagate by injecting their young into the gills of these host fish. The fish then swim to other parts of the river, and the young mussels drop off and seek suitable habitat, thus expanding the population.

Today, mussels are getting more than a little help with that.

The St. Paul District of the U.S. Army Corps of Engineers this summer attracted dignitaries and camera crews as it led a team from several state natural resource departments, the U.S. Fish and Wildlife Service and the National Park Service in reintroducing the endangered Higgins' eye pearlymussel into its historic range. The mussels were raised in captivity or released via host fish and placed into several Upper Mississippi River pools and area rivers.

The project has shown promise, says Dan Kelner, a fisheries biologist and mussel expert with the Corps' St. Paul District. Young Higgins' eye mussels have been found in Pool 2, for example, evidence that a 10-year reintroduction project there is paying off.

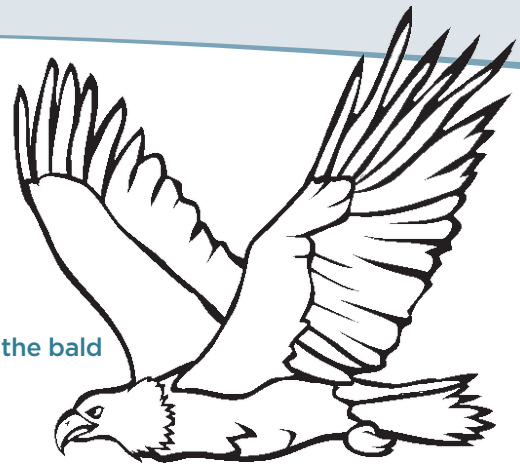
Back in the Corps' Memphis District, the survey work in the muddy ditch also revealed some hope for endangered mussel populations there. In this case, the survey was part of an experiment developed in coordination with members of a Fat Pocketbook Recovery Team and authorized by the U.S. Fish and Wildlife Service. Instead of collecting and moving all endangered mussels from harm's way, as is often done, biologists did a before-and-after project count. They wanted to know how many, if any, mussels would survive an operation involving major machinery digging across the river bottom and depositing sediment on the banks.

In 2010, pre-project sampling found a total of 11 fat pocketbook mussels in the project area. The post-project sampling found 31 fat pocketbook mussels among the 1,300 individual mussels collected, representing a similar mussel community to that found before the ditch cleanout. Interestingly, the endangered fat pocketbook mussels were found throughout the study area after the cleanout, whereas they were found only in the lower section of the ditch prior to the work.

"We have to come to a consensus on what this means, in conjunction with other studies that are ongoing," Smith said, "but it's encouraging certainly." —K.S.

FOR MORE SCIENCE:
molluskconservation.org
FOR MORE HISTORY:
tinyurl.com/9pk24kl

WHAT DO YOU KNOW ABOUT BALD EAGLES?



1. **Benjamin Franklin didn't want the bald eagle to be the national symbol of the United States; which bird did he want?**
   Cardinal
   Wild Turkey
   Canada Goose
   Osprey
   Penguin

2. **What year was the bald eagle removed from protection under the Endangered Species Act?**
   2007
   1990
   2004
   2010

3. **The bald eagle is so named because it is bald.**
   True False

4. **Several bald eagles soaring together are called a:**
   Pod
   Kettle
   Pack

5. **Which pesticide was responsible for thinning the eggshells of bald eagles?**
   EXD
   DDT
   XMC
   TMX

6. **Bald eagles mate for life.**
   True False

7. **Bald eagles are only found in North America?**
   True False

8. **An average bald eagle weighs:**
   2 pounds
   5 pounds
   12 pounds
   24 pounds
   50 pounds

9. **Male bald eagles are usually larger than females.**
   True False

10. **How wide is the bald eagle's wingspan?**
    3 feet
    5 feet
    8 feet
    10 feet
    What is your wingspan? Spread your arms straight out and have someone measure it.

11. **How long until the bald eagle reaches maturity and sports the signature snow-white head and tail?**
    6 months
    1 year
    2 years
    4 years

12. **What is the bald eagle's favorite meal?**
    Other birds
    Small mammals
    Livestock
    Fish

13. **How fast can the bald eagle move when chasing prey?**
    Less than 20 mph
    60 mph
    75 mph
    100 mph
    more than 200 mph

Answers: 1) Turkey. 2) 2007. 3) False. 4) Kettle. 5) DDT. 6) True. 7) True. 8) 12 pounds. 9) False. 10) 8 feet. 11) 4 years. 12) Fish. 13) 100 mph.

FIELD GUIDE TO Mississippi River animal Tracks

Take a hike along the river and figure out which animals were there before you!

DID YOU KNOW? The Mississippi River's depth ranges from less than 3 feet at the headwaters in Minnesota to 200 feet, its deepest section, between Governor Nicholls Wharf and Algiers Point in New Orleans.

Read along the River

"The Mississippi is well worth reading about. It is not a commonplace river, but on the contrary is in all ways remarkable." —MARK TWAIN, "LIFE ON THE MISSISSIPPI"

As winter tightens its grip, the best cure for cabin fever is a comfortable chair, a hot cup of tea, and an engrossing book. Here are a half-dozen independent bookstores along the Mississippi, with their recommendations for river-related volumes.

Red Balloon in St. Paul, Minnesota: For nearly three decades the Red Balloon has been selling a carefully selected array of children's and young adult books (with a few adult titles in the mix as well). Located on stately Grand Avenue in St. Paul, the store has story time three days a week plus author readings and special events on weekends. REDBALLOONBOOKSHOP.COM
Recommendation: Holling C. Holling's *Minn of the Mississippi*, a Newberry award–winning children's book that traces the journey of a three-legged turtle from the headwaters of the Mississippi to the Gulf of Mexico.

Lorelei Books in Vicksburg, Mississippi: Located in an 1880's building, Lorelei Books is part of the revitalization of downtown Vicksburg. Owner Laura Weeks has a great love for poetry and hosts a quarterly poetry series in her cozy loft apartment above the store. While Lorelei stocks a wide range of books, regional authors and subjects are a specialty. LORELEIBOOKS.COM
Recommendation: Wildlife photographer C.C. Lockwood traveled the length of the river to create *Around the Bend: A Mississippi River Adventure*, full of 200 gorgeous images of the Mississippi and the life along its banks.

River Lights in Dubuque, Iowa: This cozy and inviting establishment welcomes book lovers to browse the shelves in a restored 1870s building in downtown Dubuque. Billing itself as "quadruped friendly," the store gives treats to visiting dogs and cats. RLB2E.COM
Recommendation: Robert A. Holland's gorgeously illustrated *The Mississippi River in Maps & Views* provides windows into the history, navigation and scientific study of the river.

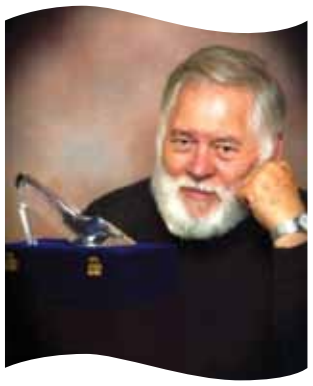
Burke's Book Store in Memphis, Tennessee: Memphis has been home to Burke's Book Store since 1875. Now in its fourth location in the lively Cooper-Young neighborhood, the store sells new, used and collectible titles and hosts frequent author readings. BURKESBOOKS.COM
Recommendation: Lee Sandlin's *Wicked River: The Mississippi When It Last Ran Wild*, a non-fiction exploration of the rough and wild world of the Mississippi River in the nineteenth century.

Left Bank Books in St. Louis, Missouri: Founded in 1969, Left Bank is the largest independent bookstore in St. Louis. Its flagship store is in the historic Central West End neighborhood (you can also browse the shelves in a newer store downtown). More than 200 author events a year are held at the two stores, generating some of the most interesting conversations in the city. LEFT-BANK.COM
Recommendation: Eddy Harris' Mississippi Solo: A River Quest, a memoir of a canoe trip from the headwaters of the Mississippi to the Gulf of Mexico.

Faulkner House in New Orleans, Louisiana: Located just off Jackson Square in the heart of the French Quarter, this new and used book emporium has been described as America's most charming bookstore. Its specialties include William Faulkner (who lived in the building in 1925), Walker Percy, Tennessee Williams, Modern First Editions, and Southern Americana. FAULKNERHOUSE.NET
Recommendation: Tim Gautreaux's *The Missing*, a novel about the search for a lost girl that vividly recreates the violent, colorful world of 1920s Louisiana. — L.E.

MY MISSISSIPPI

Inspector Winston Cavendish, 70, retired security officer, poet, and the original "McGruff the Crime Dog"



"I was posted as the security supervisor for a company, on the night shift. It amazed me to see those great ships and tugboats working on the river. At 2:45 one morning, I saw this ship coming in, being put on the dock. I said, 'What a magnificent thing, the silence of it all!' I wrote the poem, 'Highway to the World.'

"For about three months, I would give my poems out to the sailors on these ships and ask, 'What did you think of them?' They didn't like this paragraph or that, like an English teacher. I'd ask them about life as they knew it. One day I was reading the poem to a Greek sailor who looked like Zorba. I read to this tough-looking guy, huge guy. He looks at me with dagger eyes, and tears start rolling down his cheeks. He says, 'You wrote my life. You wrote my life.' That ended me changing anything. So it's a sailor-approved poem."

TUG

Oh river, how you drive me mad. One day you are a wild child, and another day you are smooth as Mississippi molasses on a hot summer day.

Now night along the Mississippi is a sight to behold, as my tugboat search lights cut through the thick fog and reveal a ghostly ship drifting south to the Gulf water. Sailor, beware of unseen ships!

Oh engine, don't fail me now, for without your powerful motors, our small vessel would surely sink as we push our river boxes up and down the big river.

Now the river runs high and the river runs low, she either above the bank or below the bank. Make up your mind, river, make up your mind!

Danger is everywhere on the big river from the sandbars, drifting logs, break-away barges and large ships out of control. We fight tides and dangerous currents for our survival.

Now some call our vessel Captain Andy, Cooper Smith, John Boy, but whatever you call us, "We are a tug."

Loneliness is a way of life on the river for Captain and crew, seven days on and seven days off; our family survival depends on our life or death on the river.

Now sometimes as we bring our cargo from the sparkling waters of Minnesota to the Gulf Stream water, I look at the fantail of my craft and can't help but think: What would it be like if we stop pushing and pulling cargo up and down the great river?

Why, the river surely would stand still. The great ships and river boxes would stop bringing their valuable freight to the world, and the world would stop coming to America, all because of a small vessel we call a tug.

Our Mississippi
PARTNERING TO KEEP AMERICA'S RIVER GREAT

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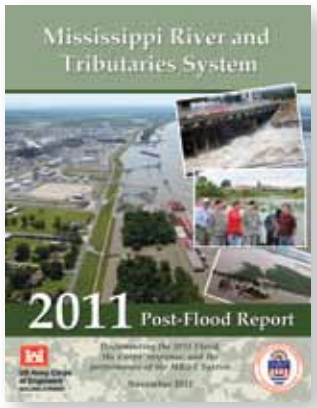
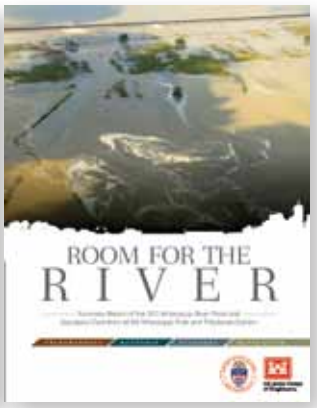
NEWS BRIEFS

Post-Flood Report details lessons learned, improvements needed





A 350-plus page report that documents the record-setting 2011 flood on the Lower Mississippi River, is available online at www.mvd.usace.army.mil/. Also available upon request is a 32-page summary of the report, written for the general public, called "Room for the River."

The larger report was compiled over more than a year and is designed to serve as an educational tool. It is also a reference point for citizens, decision-makers in this and other major watersheds and future generations of flood fighters. "Facts, figures and lessons learned hasten and guide endeavors to rebuild and improve the MR&T project, ensuring continued safety and security of our citizens' lives and livelihoods," Maj Gen. John Peabody, commander of the Corps' Mississippi Valley Division, wrote in an introductory letter.

The so-called MR&T, or Mississippi River and Tributaries Project, is a system of levees, floodways and other features credited with passing the 2011 record flood without loss of a single life. In the single flood, the system built to "make room for the river" through floodway relief valves, prevented more than $230 billion in flood damages.

The report covers a brief history of the system, the flood and what caused it, the flood fight, damages and the repair process and recommendations for system improvement.

Corps and Tribes sign new agreement

The Memphis District of the U.S. Army Corps of Engineers in November signed a key agreement with representatives of six federally recognized American Indian Tribes—the Quapaw Tribe, Absentee Shawnee Tribe, Delaware Nation, Thlopthlocco (Creek) Tribal Town, Osage Nation and Eastern Shawnee Tribe.

The Programmatic Agreement brings the Memphis District into full compliance with the National Historic Preservation Act of 1966. One of the key subjects addressed involves the handling and dispositions of human skeletal remains discovered after operation of the Birds Point–New Madrid Floodway in Missouri during the record flood of 2011 and for future floodway activations.

The agreement commits the Corps to a long-term program of damage assessment and site restoration in the event of future floodway activations or intensive levee repairs that might impact Native American graves and other sites eligible for the National Register.

Scan here with your smartphone to go to the *Our Mississippi* website. Here, you can subscribe to our e-edition, read past editions and find river-related education materials.

Send story ideas to editor@ourmississippi.org

Our Mississippi

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This newsletter is a quarterly update of ongoing efforts in the Mississippi River Watershed and does not necessarily reflect the views of the U.S. Army.