

Our Mississippi

PARTNERING TO KEEP
AMERICA'S RIVER GREAT

FALL '12



What's a treasured river worth?

THINK OF THE MISSISSIPPI RIVER as the economic equivalent of the aorta, the largest artery in the human body.

The massive river delivers an economic lifeblood of more than 500 million tons of corn, soybeans, sand, coal, chemicals and petroleum products each year as it winds through the nation's midsection.

It's an ancient migratory flyway, used by 60 percent of our birds, including the majestic bald eagle. And an entire commercial industry revolves around the 260 species of fish that navigate its waters.

Humans rely on it too, and not just for the fresh water it supplies to most major river cities. It's a source of relaxation,

recreation, food and supplies. Secretary of the Interior Ken Salazar this summer designated a 121-mile stretch of the river, The Great River Water Trail, managed by the U.S. Army Corps of Engineers, as one of the first in a new national water trail system. And while other nations have great rivers, none has one adjacent to the world's

largest contiguous stretch of farmland.

"Its impact is pretty huge," said Mark Gorman, a policy analyst at the Northeast-Midwest Institute in Washington, D.C. "The Mississippi River system drains about 42 percent of the United States land mass. Millions of people derive their income and lifestyle from the river basin."

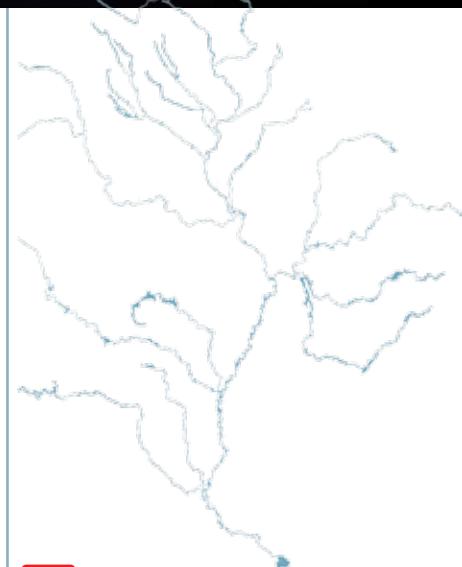
About 50 percent of the grain exported annually by the United States travels the Mississippi before being loaded on ships, mostly at Louisiana ports, according to the Mississippi River Parkway Commission. But the basin itself produces \$54 billion in agricultural goods annually, accounting for 92 percent of the nation's agricultural exports.

The river's cultural influence is equally vast, whether it be Cajun delicacies, New Orleans jazz or the literature of Mark Twain, Tennessee Williams and William Faulkner.

Both trade and settlement along the approximately 2,300-mile-long river began hundreds of years ago by tribes that hunted and farmed the floodplains, fished the river and named it *Misi-ziibi*, meaning "great river."

Today the Mississippi River valley produces more than \$7 billion a year in agricultural and forest products and about \$30 billion annually in manufactured goods. Ten percent of the nation's \$15 trillion in gross domestic product

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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.



“The drought reminded the nation, holy cow, if the Mississippi River shuts down, so does the American economy!”

comes from the Mississippi River basin, according to a study by Industrial Economics Inc. of Cambridge, Mass.

The river has long been known as the “Mighty Mississippi.” But the river’s value was underscored, troublingly so, when it turned considerably less mighty mid-summer as severe drought gripped the nation’s midsection and lowered the river to dangerous levels for commercial navigation. Water

levels have dropped by as much as 14 feet on some parts of the river.

With nearly 500 million tons of goods transported on the system each year, delays and closures from low water are expensive, costing towboat operators \$10,000 a day when they sit idle, according to The American Waterways Operators, a trade association representing barge and towboat owners. The U.S. economy took a \$300 million hit for each day barge traffic was stopped on the river, according to the Northeast-Midwest Institute.

“The drought reminded the nation, holy cow, if the Mississippi River shuts down, so does the American economy!” said Colin Wellenkamp, director of the Northeast-Midwest Institute’s Mississippi River Cities & Towns Initiative.

Dredges operated and contracted by the U.S. Army Corps of Engineers worked around the clock in late summer and

early fall to keep open for navigation the thousands of miles of waterways in the Mississippi River basin. Low water is forcing some businesses that rely on the river to get creative.

For example, the owner of the *American Queen* steamship decided not to run the ship below its home port of Memphis, Tenn., in early August for fear it would get stranded behind barges that were running aground. Instead, it used luxury motor coaches, which it called “steamcoaches,” to transport guests to various ports on the lower river. Guests were returned to Memphis in the evening for dinner cruises on the *American Queen*.

“We were offering tours, special ‘hop-on, hop-off’ routes through Memphis and even brought aboard a local Memphis band to entertain in the Grand Saloon,” Greg Brown, executive vice president of marine operations at the company, wrote in a blog post.

Experts predict the effects of the drought—the most severe in 24 years—will be felt long after the river is replenished. Prices are expected to jump for a variety of crops and other commodities, in part because of the rising cost of transporting them during low water conditions. Every one-inch loss of water decreases the carrying capacity of a single barge by 17 tons of cargo, or 1 percent of barge capacity, according to The American Waterways Operators.

“It’s going to show up in the cost of commodities, fertilizer and fuel,” Gorman said.

But, as Gorman noted, last year was a flood year for the Mississippi. Those who make their living on the river must, as always, go with the flow. —R.H.

ABOVE: *Great River Bluffs State Park, about 10 miles north of La Crescent, Minn. and La Crosse, Wisc.*

DID YOU KNOW? A typical inland barge can carry the same amount of dry cargo (like corn and soybeans) as 16 rail cars or 70 semi-trailer trucks. One barge can carry the same amount of liquid (like gas and oil) as 46 rail cars or 144 semi-trailer trucks.

Water level swings underscore river’s value

At the height of the media frenzy over this year’s near-record low water levels in the Mississippi River, an online newsletter for investors posed a provocative question on its website: “What if the Mighty Mississippi River dries up?”

It was the kind of question that frustrates the engineers who manage water levels in the river, perplexes scientists who study weather and annoys business leaders who insist the Mississippi is a reliable way to ship huge quantities of coal, grain and other commodities.

“In the short term, the thought of the river drying up just isn’t out there,” said Chuck Shadie, chief of the watershed division in the U.S. Army Corps of Engineers’ Mississippi Valley Division.

It was just a year ago, after all, that the river experienced a record flood. No one predicted that water levels in the Mississippi would seesaw from one extreme to another in less than 18 months; it was unprecedented.

In 1989, the year after the lowest water levels ever recorded, the Mississippi flooded. There haven’t been two straight years of extreme drought in the Mississippi River valley since the government began keeping records 117 years ago, said Bill Frederick, a National Oceanic and Atmospheric Administration meteorologist who works with the Corps of Engineers at the Corps’ Vicksburg District office.

“To say that we had near-record rainfall last year and a severe drought this year, it’s weird,” Frederick said. “The weather is fickle and the river is fickle.”

Global climate change and a resulting rise in sea levels, though, could mean even more fickle conditions in years to come. One possible effect: more intrusions of saltwater from the Gulf of Mexico into the lower Mississippi River. This year, that prompted the Corps to construct a \$5.8 million underwater barrier to hold back the heavier salt water and make emergency shipments of clean water to residents of Plaquemines Parish.

“As sea levels rise, this will probably become more of an issue,” Shadie said. “That saltwater wedge will come into the river sooner.”

Global sea levels have been rising by 2 millimeters annually over the past century, but that trend has accelerated recently. The Gulf of Mexico sea level has risen by 3.1 millimeters annually over the past 15 years, which has caused shorelines in the northern Gulf of Mexico to retreat at the rate of nearly six feet per year, according to government data.

The big question, Shadie said, is the degree to which a warmer planet will change long-term conditions in the Mississippi, which drains the world’s third largest watershed.

After record low water levels in 1988, the Army Corps installed a series of dikes and other structures designed to increase water flow in the main branch of the Mississippi and make the navigation channel more self-regulating, Shadie said. They were a tremendous help this year.

Because the Mississippi River system is one of America’s busiest shipping corridors, the stakes are high. Most of the corn and nearly half of all soybeans grown in the U.S. are shipped on the Mississippi and Illinois rivers, according to government data.

Marty Hettel, senior manager of bulk sales for St. Louis–based AEP River Operations, said this year’s drought made shipping cargo on the Mississippi River difficult and more expensive. But after working in the shipping industry for 32 years, Hettel said he’s not worried that low water levels will halt shipping on the river.

“It’s not like the river is going to shut down and we won’t be able to move any freight—we just won’t be as efficient,” Hettel said. “Is the sky falling, is the river going to dry up? No.” —J.A.

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.



Cities turn their faces to the river



Through recorded time, the river is where people have wanted to live. Cities are embracing that to boost economies and recreational options.

Davenport, Iowa

Officials of the Guthrie Theater in Minneapolis chose an unlikely site nearly a decade ago for a new theater: a span along the Mississippi River that had once been the province of dusty grain mills.

Instead of turning inward to the city, the nine-story, \$125 million theater overlooks stunning river vistas. The theater, designed by French architect Jean Nouvel, incorporates multiple viewing sites of the river through its lobbies and other public spaces.

“The idea became that the theater, through its design, would inhabit a historical space,” said Quinton Skinner, the Guthrie’s director of communications. That 2006 decision led to new restaurants and condominiums in what was formerly seen as a particularly unattractive area for development.

Minneapolis is one of dozens of cities that are turning their faces to the river, embracing the value of the Mighty Mississippi as a driver for economic development, recreation and entertainment.

They’re building museums, restaurants and bike trails along the river. Some, like Dubuque, Iowa, with its massive waterfront redevelopment centered around the National Mississippi River Museum and Aquarium and a 26-mile heritage trail, are using the Mississippi to attract tourists seeking to learn more about the river basin’s rich history and ecology. And they’re promoting the river as a lure for new residents and businesses.

It wasn’t always that way on the Mississippi. For decades, industry and residents dumped untreated toxins and human waste into the river, turning it into a giant, smelly, open sewer. “You don’t invite your honored guests through your mudroom,” said Pat Nunnally, a professor at the University of Minnesota and coordinator of the university’s River Life Program. The river, he said, “was where your momma always told you not to go.”

That began to change following passage of the federal Clean Water Act in 1972. The landmark environmental legislation governed “point source” generators of pollution, such as industrial discharge pipes and sewage treatment plants. The Clean Water Act became the

impetus for a renewed appreciation of the river and billions of dollars in economic development.

De-industrialization of many Mississippi River cities also prompted community leaders to figure out new economic solutions—often centered around the river.

The Quad Cities region of Iowa and Illinois lost about 25,000 jobs related to farm implement manufacturing during the agriculture industry recession of the early 1980s, Nunnally said. That calamity spawned a nonprofit group called River Action, which sought to draw new economic, ecological and recreational activity to the Mississippi.

Said Dan McNeil, program manager at River Action: “Any time we connect people to the river, it translates into more recreational opportunities and care for the environment.”

The group helped raise funds to build 62 miles of riverfront bike trails encompassing the Quad Cities: Davenport and Bettendorf in Iowa, Moline and Rock Island in Illinois.

It also sponsors annual recreational and entertainment events that attract residents and tourists to the river. Additionally, the group has been involved in the restoration of the Nahant Marsh, a 500-acre urban wetland near Davenport that had been polluted for decades. Adjacent to the Mississippi River, the marsh now features an education center and attracts ecologically minded residents and tourists to view the array of marsh, forest and wildlife species.

Further downriver, Segway Experience of Memphis offers two-wheel Segway tours of the city, including the riverfront and downtown areas. And in the Mississippi River Delta, ecotourism-related events, such as nature tours and camping, generate millions of dollars a year in expenditures by travelers in the state of Mississippi.

“Mayors are realizing we’ve got to leverage this river resource,” says Colin Wellenkamp, director of the Northeast-Midwest Institute’s Mississippi River Cities & Towns Initiative. “Businesses want to establish where people are. And people want to be by clean water and ecologically sound environments.” —R.H.



Guthrie Theater in Minneapolis, Minn.



Moline, Ill.

PHOTO PAGE 2: ROBERT J. HURTLANDSCAPE PHOTOGRAPHY

10 RIVER SPECIES WORTH SAVING

It's not hard to find wildlife along a rare river ecosystem that supports more than 400 species of birds, at least 260 of fish and more than 145 of amphibians and reptiles. But despite that diversity, about 300 other species are threatened or endangered. These elusive 10 are just a few worth preserving. —J.A.



Whooping crane:

North America's whooping crane — the continent's tallest bird at 5 feet tall with a 7-foot wingspan—was on the brink of extinction in 1940, when there were just 16 of the massive birds on the planet. There are now about 600 pairs of cranes, but fewer than half live in the wild. Spot one, if lucky, along the Mississippi River or at the International Crane Foundation facility in Baraboo, Wis.



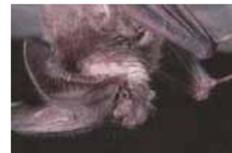
Pallid sturgeon:

This prehistoric species can grow to 6 feet long and weigh 80 pounds. You'll know one by its flattened snout, long and slender tail and rows of bony plates along its body. Scarce in the Missouri River, they're somewhat more common in the Mississippi and Atchafalaya. Meet one at the Gavins Point National Fish Hatchery and Aquarium in Yankton, S.D.



Hines emerald dragonfly:

The hines emerald is the only dragonfly on the U.S. endangered species list. One of the rarest dragonflies in North America, it is distinguished from all other dragonfly species by its emerald green eyes and metallic green thorax. Marvel at their beauty at the Mark Twain National Forest in Missouri, where they receive special protection.



Ozark big-eared bat:

This mid-sized bat is notable for its supersized ears, which at 1.5 inches long are nearly half as large as its body. Highly susceptible to human disturbance and disease, there are only 1,000 to 1,800 still living in the wild, mostly in a few Arkansas caves. Learn more at interpretive programs at Devil's Den State Park, near West Fork, Ark. Sensitive areas of caves have been closed to protect the bats.



Cerulean warbler:

This migratory bird weighs about as much as three pennies and is one of the most elusive and imperiled birds in North America. Their blue bodies are difficult to spot against the sky. They're most common in Tennessee's Cumberland Mountains but keep an eye out in northeast Iowa, where they've been spotted in some 165 separate habitat areas, including Effigy Mounds National Monument and Pikes Peak State Park.



Louisiana black bear:

One of 16 subspecies of black bear, the Louisiana black bear has a skull that is longer, narrower and flatter than the skulls of other bears. It is also larger, with males growing to more than 600 pounds. Help conservation efforts by attending the Bayou Teche Black Bear Festival in Franklin, La., where you can learn more about them and take guided habitat trips.



Interior least tern:

At 9 inches long, least terns are the smallest members of the gull and tern family. These tiny gray and white birds with black head streaks nest in small colonies, preferring a shallow hole scraped in an open sandy area, gravel patch or exposed flats—a river habitat that's disappearing. Find them at Ellis Bay, part of Riverlands Migratory Bird Sanctuary in West Alton, Mo., where the U.S. Army Corps of Engineers has turned an old barge into nesting habitat 200 yards from shore.



Ozark hellbender:

This large aquatic salamander can grow as large as 2 feet and is distinguished by its wide, flat head and rudder-like tail. The hellbender—most common in the White River watershed in Arkansas and Missouri—has many nicknames: devil dog, mud-devil and walking catfish. Its presence signifies a healthy ecosystem. Protect them by leaving in place the rocks they like to hide under or releasing them back into the river if accidentally caught while fishing.



Eastern massasauga rattlesnake:

This venomous snake once was common throughout the Mississippi River basin but fear and, conversely, the snake's popularity as a pet, are driving it toward extinction. The federal government may soon protect it under the Endangered Species Act. Massasaugas should be avoided, but there is no reason to kill them. The species is a docile indicator of ecosystem health. Spot them (safely) at the St. Louis Zoo, Minnesota Zoo or National Mississippi River Museum & Aquarium in Dubuque, Iowa.



Bird-voiced tree frog:

If you hear an unusual bird at night in Mississippi River states, it might not be a bird at all. It could be the bird-voiced tree frog, a tiny frog whose call sounds like that of a bird. Especially listen up if you're in Mississippi, where they're most common.



FROM LEFT: Rock spills out of a protection cell at Lock 27 in St. Louis after low water exposed a vulnerable, unarmored section that was then impacted by barges. Locks 27 near St. Louis, the busiest on the Mississippi River system.

Open (after repairs) Temporary lock shutdown raises concern about aging infrastructure

AN UNPRECEDENTED LOCK CLOSURE that stopped river traffic for five days at the Mississippi River's busiest lock, at its busiest time of year, pointed out a couple of things to Andy Schimpf, Rivers Project manager for the U.S. Army Corps of Engineers.

The fact that both of the lock chambers at Locks 27 at the Chain of Rocks had never before closed on an unscheduled emergency basis underscored the fact the Corps is doing a good job maintaining an aging system of locks, on very limited resources, he said.

"We certainly don't get enough money to repair all the backlog, but we try to prioritize and address the critical high risk problems," he said. "The fact we're not seeing a lot of catastrophic failures like this is an indication we are putting the funds we have in the correct places."

However, the incident also exemplifies the potentially critical consequences of more—or more serious—future lock failures as a maintenance backlog builds. According to Maj. Gen. John Peabody, the U.S. Army Corps of Engineers has a \$60 billion construction backlog and a construction budget of \$2 billion a year. And failed infrastructure can be costly, as the September closure proved.

The 5.5-day closure in mid-September cost the towing industry between \$11 and \$15 million in navigation delays, according to Corps economists. That figure doesn't factor in other costs such as factory delays and layoffs, cost to reroute product by other transportation means, value of the cargo and delays to oceangoing vessels waiting for its arrival. More than 59 million tons of cargo passes through Lock 27 each year, including about half of the nation's farm exports.

In this case, low water levels—coupled with an aging cell—was the problem.

Problems arose when river stages dropped to their lowest point since 1988 and exposed an unarmored portion of a protection cell used as a "bumper" for barge traffic positioning itself to head into the lock. The protective cell was designed to allow barges to rub against it and prevent them from hitting the lock miter gates. However, in this case, tows waiting to enter the lock rubbed against an unarmored section exposed by low water and caused a tear in the metal shell, spilling rock into the channel, Schimpf said.

During five days of emergency repair, rock was removed from the structure and channel and giant sandbags were used to plug the hole until permanent fixes can be made. During that time, somewhere between 63 and 95 tows were effected, and many had to moor along the river and wait with southbound loads of corn and soybeans, northbound loads of petrol, coal and cement.

"Our company had chemical plants that were running out of product, possibly looking at shutdowns," said Shannon Hughes, port Captain, Kirby Inland Marine. "The whole navigation industry suffered huge economic impacts from the failure."

Immediately following the closure, six U.S. Senators called on Congress to prevent potentially more serious economic consequences by including long-term strategies for improving locks and dams and expediting construction projects in the next Water Resources and Development Act. The current system was built 70 years ago, the legislators said, and will need increasing modernization to keep the nation economically competitive. Of the 29 locks and dams on the Upper Mississippi River which were constructed in the 1920's and 30's, only one has been replaced. Locks and Dam 26 was replaced with Mel Price Locks and Dam. —K.S.

America's Great Watershed Initiative sees collaboration as key to river future

What common ground does a CEO share with a university researcher or a scientist from an environmental organization? Why are those in the agriculture industry interested in talking about issues that affect commercial and recreational fisheries?

Because the Mississippi River basin is more interconnected than many realize, says Craig E. Philip, CEO of Ingram Barge Company and a speaker at a recent America's Great Watershed Summit. More than half the goods and services consumed by Americans are produced with water that flows through the system, the basin's farmers and ranchers raise or grow \$54 billion in food there annually, and millions benefit from its freshwater or energy source.

The St. Louis-based event drew together some 200 people from throughout the massive watershed stretching from Wyoming to Pennsylvania and from Minnesota to Louisiana, representing federal agencies, academia, non-profit environmental organizations, the barge industry, agriculture and more. All came ready to compromise, organizers said, for the best interest of the river.

At one time, channels were straightened for new navigation or flood control infrastructure without consideration for water quality and wildlife habitat or outdoor recreation—a multi-billion industry, Philip wrote in an editorial about the summit. Not so today, as engineers have demonstrated ways to restore natural river features and manage infrastructure for multiple uses, he said. Speakers like Ann Mills, Deputy Under-Secretary for Natural Resources and Environment at the United States Department of Agriculture spoke of innovative programs that provide economic incentive for farmers to reduce the runoff that makes its way into the Gulf's dead zone. Environmentalists spoke of the importance of river navigation.

Maj. Gen. John Peabody, commander of the Mississippi Valley Division of the U.S. Army Corps of Engineers, asked attendees to add their own goals to a 200-year working vision for the river to help perfect an evolving river visioning campaign. Such suggestions and other outcomes of the summit will be added to the project's website, agwi.org. The next issue of *Our Mississippi* also will include an in-depth look at the conference and related partnership efforts.

"We all come at these issues with different perspectives and different priorities," Maj. Gen. Peabody said, adding that "Unless we cooperate with each other, listen to each other, understand each other, compromise with each other, we are not going to get to actions that are going to help advance our nation's most vital resource—The Great Watershed." —K.S.



ABOVE: Attendees at America's Great Watershed Initiative gather in small groups to discuss what form a formal collaboration among river interests might take.

MY MISSISSIPPI

Maddie Phillips, 15, Twin Cities River Rats water skier

"I learned how to water ski on a lake in Wisconsin, but I learned how to seriously ski on the Mississippi River, with the River Rats. I joined the group when I was 9 years old and I absolutely love it. Our season starts in February, when we dry-land the pyramids and other stunts. Then we hit the water May 1 and perform shows every Thursday evening till the end of August. This year, though, we had to cancel almost every show in June because oddly, early on, the water was so high, and the current was extremely strong. It was a safety thing.

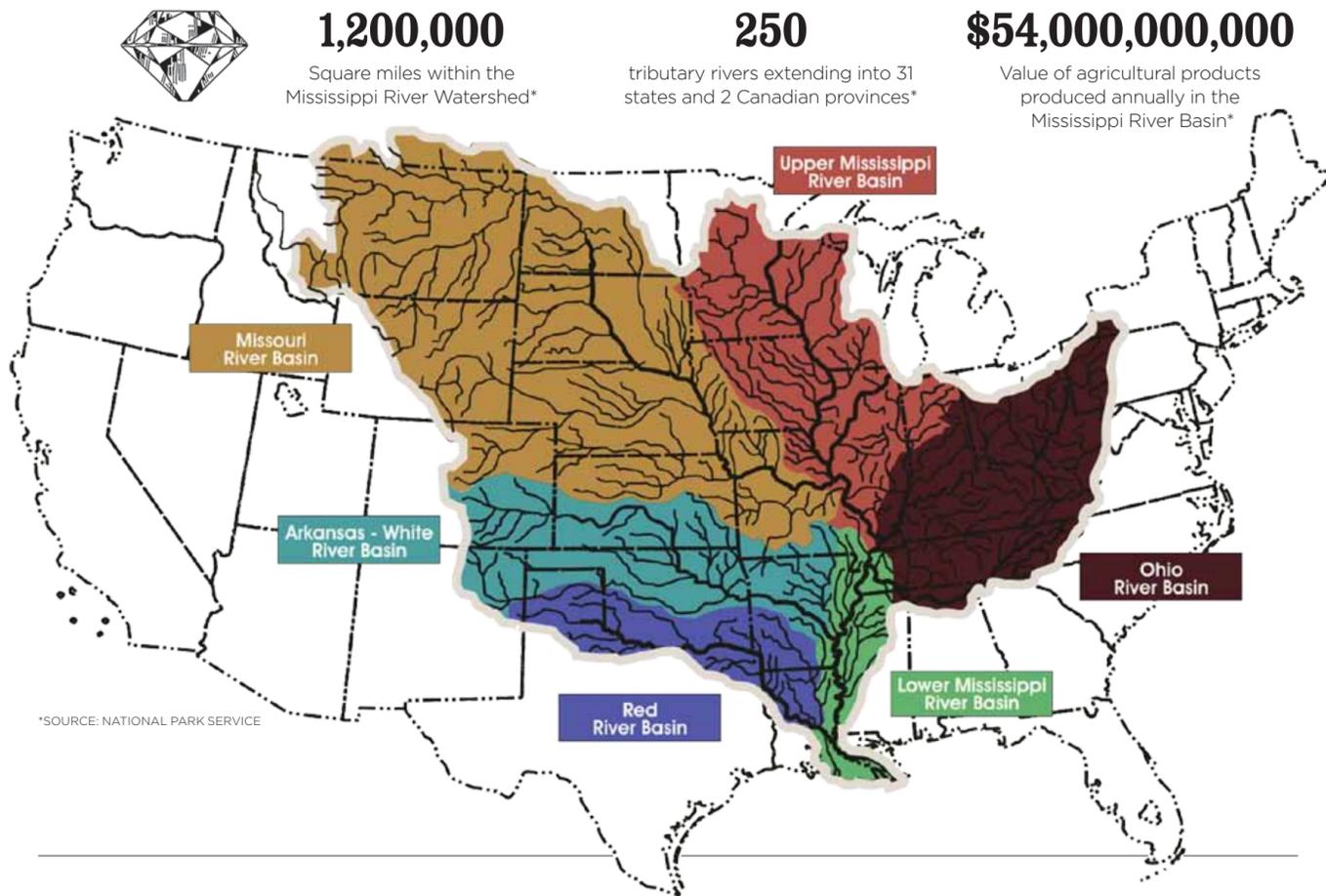
"When I was 9 the team decided I should be at the top of a rare, 5-tier pyramid. I was scared, but if I hadn't done it I'd regret it forever. Now I'm often at the top of pyramids, but there are young, smaller girls joining who belong there.

"I spend hundreds of hours skiing on the Mississippi every summer, practicing and performing. We live in Shakopee, Minn., about 45 minutes away, now but we're looking for a house closer to the Twin Cities because my dad, who used to ski with the River Rats, is now the show director. It would bring both of us closer to what we love." —S.A.



AN AMERICAN TREASURE:

Pirates once plied the waters of the Mississippi in search of loot. Today's river treasure takes many forms, natural and engineered.



There are few gems rarer than the bottomland hardwood forests, cypress-tupelo swamps and salt marshes of the Louisiana Delta, critical habitat for more than 400 bird species each year, and an estimated 100 million individual birds.

4 Corps plants cumulatively produce **226.5 megawatts of power**

- Clarence Cannon Dam, Salt River
- Narrows Dam, Little Missouri
- Blakely Mountain Dam, Ouachita River
- DeGray Dam, Caddo River

8 non-federal dams on the Mississippi and Illinois add another **395 megawatts.**

MULTI-TASKING RIVERS

The Black & Ouachita Rivers in Arkansas & Louisiana:

- Supply water for five cities and several industries
- Draw 700,000 visitors annually to 18 recreation areas
- Contain three Corps-operated multi-use reservoirs
- Navigate through four locks and dams commodities including petroleum, fuel oil, gasoline, fertilizer, ammonia, limestone, gravel and wheat



302 bird species

including bald eagles and white pelicans flock to **15,253-acre Lake Red Rock**. The largest lake in Iowa is home to a Corps-run reservoir and recreation areas.

A BASIN MODEL

The Iowa-Cedar Rivers basin is one of only five in the United States designated as a hydrology, life and policy program (HELP) basin by the United Nations. Through it, scientists, resource managers and policy experts work in true collaboration on water-related problems. As a model, the effort will seek to answer questions about the effect of climate change and human interference on quantity and quality of water.

The navigation system on the Mississippi and its tributaries boasts:

4,267 miles	47 percent	487,000,000 tons	59 locks	7 deep draft ports	51 shallow draft ports	\$2,700,000,000 savings
of commercial waterways	of inland waterborne commerce moved on system	of cargo moved on the system in 2008				on domestic transportation, afforded by waterway's existence

Engineering for Natural Dredging

In 1988, dredges moved **18 million** cubic yards of sediment due to drought. In the 2003 drought, dredges moved only **8 million** cubic yards, thanks to the Applied River Engineering Center and its development of chevrons, dikes and weirs that help deepen the channel naturally.



ROBERT E. LEE built the first wing dams used to stabilize the St. Louis Harbor, in the late 1830s.

Preventing Floods

MISSISSIPPI RIVERS & TRIBUTARIES PROJECT, SINCE 1928 INCEPTION

\$14 billion project cost
\$478 billion damage prevention

36	Number of Corps-run flood control reservoirs in Arkansas, Mississippi, Illinois, Missouri, Iowa, North Dakota, Louisiana, Wisconsin and Minnesota	8,400	miles of levee
25		25	miles of breakwaters
700		326	miles of rock dikes
15	pumping stations	1,092	miles of revetment
400	drainage structures		

26 YEARS
100,000 ACRES

ISLANDS of the MISSISSIPPI

The Upper Mississippi River Restoration Environmental Management Program's Habitat Rehabilitation and Enhancement projects have created 26 islands over 3,000 acres to restore waterfowl, fish and wildlife habitat in Pool 8, all within the Upper Mississippi River National Wildlife and Fish Refuge. In all, 100,000 acres of habitat have been restored via 54 completed projects.

relax

In the Mississippi Valley Division along the Mississippi River, the U.S. Army Corps of Engineers manages:

- 444 recreation areas
- 9,526 camp sites
- 33 lakes
- 329 boat ramps
- 14 visitor centers
- 6,074 miles of lake shoreline
- 2 million acres of land and water

ahh...

Find one near you at CorpsLakes.us.

Restoring nature's plan

The Corps' Andalusia Refuge Habitat Rehabilitation and Enhancement Project in the Upper Mississippi River's Pool 13 created nearly 130 acres of managed nesting, resting and shallow-water feeding habitat for waterfowl.



9 THINGS YOU CAN DO FOR OUR *Mississippi River*

- 1 Join a river cleanup.
- 2 Reduce use of lawn fertilizer that can run off into the river.
- 3 Buy organic, local produce.
- 4 Act locally, demanding clean water protections.
- 5 Respect the storm sewers, keeping toxic wastes out.
- 6 Landscape with native plants and trees, nature's flood control.
- 7 Support river access.
- 8 Get to know your river more intimately at a park or paddle outing.
- 9 Become an active river citizen.

Source: *Mississippi River Corridor—Tennessee*

A river we drink

The Mississippi River quenches a thirsty watershed—but not without a little help. AS A CHILD growing up in St. Louis, Curtis Skouby didn't ponder the origin or quality of the water he drank from the faucet. It wasn't until he traveled to other parts of the country that he discovered that drinking water often has a distinct taste.

"I'm native to the St. Louis area but I didn't know how good our water was until I drank the water in other places," said Skouby, public utilities director and water commissioner for the city of St. Louis.

The drinking water in St. Louis has consistently ranked among America's best, partly because it lacks the sulfur smell or musty taste that can accompany water drawn from wells or lakes where algae blooms are a problem. The reason: Every drop of the 135 million gallons of drinking water that St. Louis produces each day is drawn from the Missouri and Mississippi rivers, then chemically treated to make it safe to drink.

"Looking at the river, with all that sediment in it, it's not very appealing, and people comment on that," Skouby said. "But the river is a pretty good source of drinking water."

About 18 million people in more than 300 cities rely on the Mississippi River and its tributaries for drinking water, according to the Northeast-Midwest Institute. Several of those are major population centers—Minneapolis and St. Paul, the Quad Cities in Iowa and Illinois, New Orleans. Other communities, including Memphis, Tenn., have opted to forego using the Mississippi for drinking water and instead draw water from wells.

The city of Cape Girardeau, Mo., recently switched to well water after 118 years of using the Mississippi River as its source of drinking water. City officials said the \$5 million project would result in better tasting water and save money in the long run. Cleansing Mississippi River water required using more than a dozen treatment chemicals, far more than will be needed for the well water.

From river to tap

Elevated concentrations of sediment and agricultural fertilizers in the river require significant amounts of chlorine to make the water safe for drinking. Using too much chlorine to disinfect drinking water, though, can create cancer-causing byproducts called trihalomethanes, or THMs—underscoring the need to address river water quality on a basin-wide scale, said Dave Johnson, chief of water quality at the U.S. Army Corps of Engineers district office in Vicksburg, Miss.

"Removal of organic materials that give the river its color is the biggest challenge for municipal drinking water systems," said Johnson, who monitors water quality trends in the lower Mississippi River. "When you treat for those organic materials with chlorine you get the THMs. Reducing THMs to acceptable levels is a major challenge."

The U.S. Environmental Protection Agency clamped down on THMs in drinking water in the 1980s, after scientists discovered a spike in rectal cancer among southern Louisiana residents who drank chlorine-treated water from the river, Johnson said.

Allowable levels of THMs in drinking water are much lower now than in the 1970s. And, the Mississippi is cleaner than it was then. But serious problems remain, according to government studies.

Nitrate pollution in the river—caused primarily by fertilizers that drain off farm fields—has worsened over the past four decades, according to a 2008 U.S. Geological Survey report.

Restoring the Mississippi and keeping it a source for healthy drinking water will require tougher regulations and changing the way residents and policymakers perceive the river, said Cecily Smith, water resources specialist at Illinois-based Prairie Rivers Network.

"I don't think the Mississippi River has been raised to the status of other great waters in our country, such as the Everglades, Chesapeake Bay or the Great Lakes," Smith said. "Tons of money is being poured into restoring those watersheds and improving water quality. That's just not happening with the Mississippi." —J.A.

MY MISSISSIPPI

Jim "Punky" Punkiewicz, 51, U.S. Army Corps of Engineers maintenance diver, Rock Island, Ill.



"There's twelve of us on the Corps dive team and I'm the senior guy. I've been diving over twenty years now, and it takes up most of my time from April through December. I love the solitude, the adrenaline rush, the fast water. There's no one really down there but yourself. You gotta rely on yourself. You can't see

anything most of the time, so you've got to visualize in your mind what it looks like and feel around.

"We do the maintenance on the locks and dams and the reservoirs. We're working with anything from a pipe wrench that's 6 feet tall to 3-inch bolts. We cut steel underwater with a Broco torch, which is very dangerous because you have electricity flowing. You can get a jolt that will drop you to your knees.

"We do anything the Corps wants us to. If they want to dig somewhere, we'll take a biologist out with us and we dive and if we bring up an endangered mussel, they won't dig there. If a Coast Guard boat gets lines caught in its wheel, we go down and fix that. We clean out screens near locks, and you never know what you'll find in there, maybe dead deer. Most of the time you're crawling, too, especially with the big current. In winter sometimes we've got to get in the water to break ice.

"Last year one of our steel gates fell in the water—200,000 or 300,000 pounds, at Lock and Dam 19 in Keokuk, Iowa. We had to dive and burn holes inside the gate so we could get straps in to lift it out. Wow, that was a big job. Huge. Shut the river down for five days, and a lot of long hours.

"We've got young guys now we're training, so I might stay up top more often. I know I'm getting up there, and these guys need more dives. But I wish I could dive 365 days of the year." —S.A.

"Last River Rat" shares river's lessons



Kenny Salwey

Kenny Salwey built a shack by the Mississippi River backwaters near Alma, Wis. He stayed warm with a wood burning stove, read by kerosene lamplight and slept in a bunk. He dug out a spring for water.

He hunted and fished and even ate muskrat, which he said tastes like duck. The river provided for 28 years.

"I let in few people. I never fit in with society. I made my living as a river rat," said Salwey, who became known as "The Last River Rat" when the hermit was discovered nearly 18 years ago.

Today Salwey, 69, gives back to the river. He spins tales of the river's magic to nature-starved schoolchildren and, in bookstores, to city dwellers pining for his tales of freedom.

His latest book, *Muskrat for Supper*, is geared to children. But at a Des Moines, Iowa, bookstore this summer, most of those who clutched copies and smiled at his homespun manner were adults. He rose from his chair to show off his necklace, a turtle foot.

"I'm like a turtle," he said. "Life is too short to hurry through."

He didn't set out to be a man who could put Thoreau to shame with his prowess at solitary life, communion with wild creatures and efforts to eke out an existence on the land. Salwey was just doing what he knew, growing up not far from the river with a family that hunted rattlesnakes for bounty, trapped for pelts and dug up roots and herbs.

He spent too much time staring out the schoolhouse window as a child and joined the military at 17, returning to realize his only education was river life. By his backwater slough shack, he watched seasons pass, fed squirrels by hand and followed his dogs, who knew where ice was thick enough to walk on so he could fish for his supper.

He didn't consider himself homeless; homeless people don't trap game and know about beaver teeth. His home was the wild and he lived with it, not off of it like a tick or a louse.

"A certain amount of independence can be gained in that lifestyle," he said. "But those were hard days. Being a river rat, you freeze in the winter and roast in the summer. In my best year I made \$10,000."

Wanderers would find him and stop to visit. One day in the mid-1990s, an old game warden stopped by and asked him what he was up to.

"Swatting mosquitoes," Salwey said.

Maybe, the warden asked, you could share some of this river knowledge with a group of teachers coming through town? Salwey said he had fishing lines to tend.

"You are one of the most selfish, greedy people," the warden scolded. "You take and take from nature, but you don't give nothin' back."

It hit Salwey hard. He agreed to talk to those teachers and discovered a hidden gift for storytelling. He began to speak to dozens of school groups. A regional river magazine asked him to write a monthly column. A national outdoor magazine printed his profile, which led to a 2001 biography, *The Last River Rat*, by J. Scott Bestul.

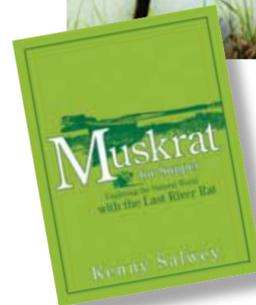
Many river rats once lived along the river banks, sometimes entire families, but few are left. People like the modern lifestyle, but not him. "I felt rich" in those years, he said. Today, he lives with his wife of 15 years on a bluff over the river near Alma, and he travels to tell children and adults alike that nature can be found everywhere, even in your backyard.

He ventures to his own back yard, where the river's flow mesmerizes like a campfire. He stops and bends over to pick up rocks and bugs, remembering the lessons of all those years.

"I still don't feel like I fit in," said Salwey. "I do not speak their kind of language and never will. I'm just not as self-conscious about it. I've learned it's not a bad thing to be different."

He's also discovered an unexpected mission along the way: Asking children to do better than adults have done with nature, urging them to remember the circle of life.

"We are all fellow travelers with all things in nature, not just the beautiful things like wildflowers and white-tailed deer but with poison ivy, bees and that boot-sucking Mississippi River mud," he said. "If you know about those unhuggable creatures, you will care about them and have a respect for that circle. All things are interconnected. We don't stand outside that circle." —M.K.



In his latest book, *Muskrat for Supper: Exploring the Natural World with the Last River Rat*, author Kenny Salwey writes of the first time he told his river stories—to a group of school teachers:

"When I got there, I was as nervous as a long-tailed cat in a room full of rocking chairs, you know what I'm saying. Well, I got up and told some stories, and to my surprise, some teachers came and invited me to come to their schools to do the same for their students. Even more surprisingly, I said I would—and I did.

"I found out the most peculiar paradox: If I were to see the great circle of life remain healthy and happy, the way I hoped to see it remain, I needed to give it away in order to keep it. If folks couldn't learn about it, they couldn't love and respect it. If you don't love and respect the circle you won't take care of it. That's the way it is. That was about 20 years ago, and from that time on I've been doing it."

PHOTO CREDITS



OUR MISSISSIPPI KIDS

The Mississippi River is... a treasure.

Our Great River is one of America's finest gems. Its value cannot be expressed in a single word. Find 16 words in the word search; they may read horizontally, vertically, diagonally, or backward. Then fill in the blanks with your own words expressing what the Mississippi River means to you.

AGRICULTURE
BEAUTY
CULTURE
ECONOMY

FRESHWATER
FUN
HABITAT
HISTORY

INDUSTRY
INFRASTRUCTURE
LANDMARK
RECREATION

SUSTENANCE
TOURISM
TRANSPORTATION
TREASURE

To me, the Mississippi River is...



Mississippi River mayors craft a river-focused legislative agenda

More than three million people live in the Mississippi River's 124 mayor-led cities and towns. And those mayors are now poised to take the concerns of their constituents—and rest of the nation—to Washington, D.C., where they're hoping to spearhead a Mississippi River-focused legislative caucus, and more.

At its first formal meeting in mid-September, the Mississippi River Cities and Towns Initiative selected its leadership team and created an initial list of focus topics. While many successful organizations and agencies are doing important work along the river and its watershed, St. Louis Mayor Francis Slay said he thinks mayors are uniquely poised to make a difference. They're the frontline interface between the waterway and the nation's economy, he says, and can be a catalyst for unprecedented regional cooperation.

"Part of our effort is to raise awareness about what the Mississippi River does mean," he said, at a meeting of another collaborative river effort, America's Great Watershed Initiative. "Many people don't understand the impact to our ecology and environment. We take it for granted many times. We're right here, and many times we have our back to the river."

Mayors are working on revitalizing their own riverfronts—St. Louis even held an international design competition to connect the river to the arch grounds—but there's more to it, Slay and other mayors say. International trade to U.S. ports represents a significant portion of the nation's Gross National Product. Some 60 percent of grain output moves along the Mississippi River. And that's just a beginning.

At the September meeting, mayors agreed to a few key priority areas, though the specific agenda will be refined for the next legislative session. Among the items the group will tackle are the reform of programs critical to disaster recovery as well as the Inland Waterways Trust Fund—historically the key way of funding navigation improvements but now facing serious shortfalls. Other areas of concern include the national flood insurance program and the need to make changes that promote sustainable floodplain development; formation of a Mississippi River Senate and House caucus; and the need to boost shipping and trade competitiveness via river ports.

Much of the nation's attention has been focused on the Gulf of Mexico, the Florida Everglades and Great Lakes, Slay said, with a corresponding decrease in resources provided to the Mississippi River. A number of factors make this an opportune time for mayors—and others—to come together, he said, among those natural disasters that include a record flood, a near-record drought and a hurricane.

"The future is riddled with continued funding uncertainties and challenges," he said, "but I think this is a good time to be organized and poised to provide leadership on something important not just to river cities and mid-America but also to our entire country."

As of early October, 41 mayors have joined the initiative and elected a board led by co-chairs Slay of St. Louis and David Kleis of St. Cloud, Minn. Representatives include Dennis Egan, Red Wing, Minn.; David Hemmer, Prairie du Chien, Wisc.; Roy Buol, Dubuque, Iowa; Tom Hoechst, Alton, Ill.; Jo Anne Smiley, Clarksville, Mo.; Dickie Kennemore, Osceola, Ark.; A.C. Wharton, Memphis, Tenn.; Paul Winfield, Vicksburg, Miss.; Hiram Copland, Vidalia, La. —K.S.

OUR MISSISSIPPI TRAVEL

In famous footsteps

Some of the nation's most notable citizens lived and worked on the banks of the Mississippi, Ohio and Missouri rivers. Here are some sites where you can walk in their footsteps:

MISSISSIPPI RIVER

ST. PAUL, MINN.

F. Scott Fitzgerald: The Great Gatsby's Neighborhood

Tour the tree-lined neighborhoods where Fitzgerald lived and wrote during his early years. His birthplace at 481 Laurel Avenue is a National Literary Landmark. Get a map from the St. Paul Public Library. TINYURL.COM/9PFQTYG

PEPIN, WIS.

Laura Ingalls Wilder: Little House Memories

Beloved author Wilder was born in 1867 in a little house seven miles from this Mississippi River town. A recreated cabin sits on the spot, now surrounded by farm fields instead of prairie. In Pepin tour the Laura Ingalls Wilder Museum. LAURAINGALLSPEPIN.COM

DUBUQUE, IOWA

Al Capone: Gangster's Hideaway

During Prohibition, Al Capone and his entourage went to Dubuque when things got too hot in Chicago, usually to the top floor of the city's Hotel Julien Dubuque. Today the hotel's luxurious four-room Capone Suite recalls its most notorious guest. HOTELJULIENDUBUQUE.COM

ALTON, ILL.

Abraham Lincoln and Stephen Douglas: The Great Debaters

Abraham Lincoln and Stephen Douglas held their seventh and last debate for a U.S. Senate seat here in 1858. Statues mark the spot in Lincoln Douglas Square, and the Alton Museum of History and Art tells the story of how Douglas got (in the words of a contemporary newspaper account) "thrashed out" by Lincoln. Lincoln lost the election but gained national attention that helped him win the presidency. ALTONMUSEUM.COM

ST. LOUIS, MO.

Scott Joplin: King of Ragtime

Ragtime's most celebrated musician lived here from 1900–03. The Scott Joplin House State Historic Site preserves the modest apartment on Delmar Boulevard where he composed many of his famous songs. TINYURL.COM/BLED4P4

MEMPHIS, TENN.

Martin Luther King, Jr.: Civil Rights Shrine

The National Civil Rights Museum is housed on the site of the Lorraine Motel where King was assassinated in 1968. It chronicles the long struggle for black equality in America and honors its martyr. CIVILRIGHTSMUSEUM.ORG

CLARKSDALE, MISS.

Muddy Waters: Where the Blues Began

This delta town spawned a long list of blues legends, including Muddy Waters, W.C. Handy, Ike Turner and B.B. King. The Delta Blues Museum features recordings and memorabilia from their lives. DELTA.BLUESMUSEUM.ORG

MISSOURI RIVER INDEPENDENCE, MO.

Harry S. Truman: The Buck Stops Here

Visit the Truman Library and Museum to explore the life of our 33rd president, then tour the home where Harry and Bess lived before and after their White House years. The plain-speaking president's hat and coat still hang where he left them. NPS.GOV/HSTR

OHIO RIVER

CINCINNATI, OHIO

Harriet Beecher Stowe: Abolitionist Landmark

Stowe's experiences in Cincinnati inspired her to write the anti-slavery manifesto *Uncle Tom's Cabin*, which Abraham Lincoln credited with launching the Civil War. Her home tells the story of her life and that of her remarkable family. STOWEHOUSECINCY.ORG —L.E.

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NEWS BRIEFS

Websites get new look

Recreation.gov, a travel-oriented website jointly run by the U.S. Army Corps of Engineers, U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service and more, is getting a new look—part of President Obama's America's Great Outdoors Initiative goal to make outdoor spaces more accessible to everyone in America.

The changes make it easier to navigate the interagency website that includes 90,000 sites on federal lands including national parks, wildlife refuges, waterways, forests and recreation areas.

Getaways are grouped by intriguing themes, say places that interpret stories of the Civil War or let you be inspired by Lewis and Clark. Other themes range from camping for beginners to day hikes for the weekend warrior.

Watch for changes, too, in all U.S. Army Corps of Engineer sites soon. USACE is standardizing websites to the same format now existing at www.usace.army.mil to make navigation simpler. Check that site to see the new format and to read featured pages focused on the Corps' response to this year's drought on the Mississippi River and Hurricane Isaac.



Show me your Rivers



As of this summer, the "Show-Me" state is now also "The Great Rivers State," an effort that state lawmakers say reflects its resources—110,000 miles of river, including the Missouri, Mississippi and Illinois—heritage and tourism opportunities.

The new slogan was proposed by The Missouri Stream Team

Watershed Coalition as a way to boost tourism and ecosystem protection efforts in the state. For \$40 a year, state residents can order a new license plate with the slogan. "Show-me" fans need not fear. The slogan adds to the list of state nicknames, which include "The Cave State" and "Where Rivers Run."

Great minds partner for a better river

An evolving partnership between the Mississippi River Commission and Harvard University grew over the summer, harkening back more than a century to the first Mississippi River Commission. Two of the original seven members were Harvard graduates.

Water management and potential world-wide shortages is considered by many Harvard students as one of the great challenges facing mankind, says John Briscoe, the Harvard professor who headed the exchange. Spending time with resource decision-makers and studying history are important ways to discover that solutions are complex, and must be compatible with decisions of the past made by bodies like the River Commission. One student worked with the Engineer Research and Development Center (ERDC) to study advanced hydraulic models. Others are part of a new program that's providing cross-training to water experts in other disciplines—recognizing the value of collaboration in water management. Next year, Harvard's work will expand—pulling in businesses that benefit from water to play a more active role in finding creative solutions to our water challenges.



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