# Our Mississippi

PARTNERING TO KEEP
AMERICA'S RIVER GREAT

US Army Corps of Engineers

MISSISSIPPI VALLEY DIVISION · SPRING 2025


# A New Span for Spawning?

***Controlling flows through Mississippi River locks and dams during lake sturgeon spawning season might boost comeback hopes for this ancient river species.***

**A FISH BIOLOGIST AND AN ENGINEER MEET AT A LOCK.** That could be the start of a clever joke—or in the case of the Upper Mississippi River of the potential comeback of a fascinating and important river species, one that on this stretch of the river has hovered on the brink of extinction.

An exciting collaboration between biologists from different agencies, lock operators and water management specialists has successfully adjusted water flows through the Mel Price Locks and Dam in Alton, Ill., to help lake sturgeon spawn in subsequent spring spawning seasons. It worked so well that the U.S. Army Corps of Engineers is looking at whether the same success might be replicated at other locks on the system—and perhaps beyond.

The success at Mel Price is promising enough to assume it could be replicated, said Ryan Swearingin, a biologist who launched the project to recreate the river flow and temperature conditions present when the fish spawned in 2015 and now is heading up the broader study. Initial findings show that at least half of the river's 27 locks and dams could be managed differently, without much cost, and potentially lead to successful sturgeon spawning, he said. Others could lead to success with some tweaking of habitat, such as the addition of more rock in the right spots in the river.

"For me, it's been incredibly exciting," Swearingin said. "I don't think any of us expected it would work like it has. We originally thought you had to have very specific velocities, but as long as you have good consistency, it seems sturgeon are willing to tolerate quite a range of conditions."

What they also found is that navigation wasn't at all impacted by a simple change in flows during spawning season, leading to a win-win.

"Navigation is our primary mission," he said, "but we're finding ways to benefit the species within our existing infrastructure."

*Continued on page 2* >>

PHOTO: ADOBE STOCK.

**Our Mississippi** is a newsletter of the U.S. Army Corps of Engineers about its work in the Mississippi River Basin toward both economic and ecological integrity of the river system. It is published by the U.S. Army Corps of Engineers, Mississippi Valley Division, in accordance with AR 360-1 for its Mississippi Valley workforce and external audiences and collaborative partners, including other Corps' districts and stakeholders within the division's area of responsibility. The views and opinions expressed are not necessarily those of the U.S. Army Corps of Engineers, the U.S. Army or the U.S. Department of Defense.

## Recipe for Spawning

To use lock flows for spawning, sturgeon need:

- When the timing is right, to spawn from 400 to 1,200 feet downstream of a dam, so the velocity can be adjusted to their speed preferences.
- A cobbly, rocky substrate.
- Enough flow to keep sedimentation from suffocating the offspring; female sturgeon lay up to 500,000 eggs per spawning interval.

CLOCKWISE FROM LEFT: Sturgeon spawn at the base of the Mel Price Locks and Dam near West Alton, Missouri. This event was celebrated by a collective of biologists, hydrology experts and lock operators who revised flow through locks to create perfect spawning conditions. These "charismatic megafauna" inspire awe for their ancient appearance—a streamlined shark-like body, long snout and rows of sharp armored plates. U.S. Army Corps of Engineers biologist Ryan Swearingin is leading efforts to see if the spawning conditions can be recreated at other locks and dams on the Upper Mississippi.

## Genetically gifted

Lake sturgeon, confusingly named because they're most often found in big rivers with silt-free bottoms of sand, gravel and rock, evolved during the Jurassic era some 150 million years ago and survived where the dinosaurs didn't. They've changed very little during that time, Swearingin noted, resisting genetic mutation and looking almost identical to the way they did in the Jurassic era. Recent studies have looked into this as potentially holding the answer to healing cancer, he said.

But this "charismatic megafauna" is also vulnerable to overharvest, particularly since females spawn just every one to three years. The population was also decimated from the desirability of their eggs for caviar, overfishing and human alterations of river channels. Currently, lake sturgeon are protected and listed as endangered in Missouri, Illinois and several other states.

Agencies like the U.S. Fish and Wildlife Service and Missouri Department of Conservation have worked to increase the population by raising them in hatcheries to release them into large rivers and tagging and tracking the young.

Taking the next step of helping them spawn through lock and dam operations felt a bit like magic but "just took somebody asking the question and the other person to listen," said Russell Errett, a Corps water management specialist who worked on developing the right flow formula.

"It's no fault of anyone before this, but these are navigation structures, and we've only singularly focused on one aspect. We just asked, 'Is there something we can do to help benefit the ecosystem, and will it impact navigation?' If the answer is no navigation impact, then why aren't we doing it?"

Errett, for the original model, looked at conditions through which sturgeon spawned with minimal operational changes at the Mel Price Locks and Dams in 2015 to see if the Corps could recreate the flow, temperature, velocity and gate openings. It worked, and sturgeon have successfully spawned below Mel Price for four subsequent seasons. Now through a grant from the Sustainable Rivers Program, teams are working with the Missouri Department of Conservation and multiple disciplines within the Corps to see if they can replicate that success at other locks on the river. The work is being done by an interdisciplinary team of lock and dam operators, natural resource specialists, fisheries biologists, engineers and water control managers—and across three Corps districts.

To launch the study, teams ranked each lock based on six specific criteria. They looked at things like whether sturgeon are known to be present beneath the particular lock, and if the substrate was made of the fish-preferred cobbly rock. They also ranked things like interest of other agencies in the site and how easily the spot could be monitored during spawning. Through the ranking, they determined that spawning could be facilitated at least half with simple flow changes and little expense, Swearingin said.

Lock and Dam 2 in Hastings, Minn., rose to the top because Minnesota Department of Natural Resources data showed there were radio-tagged fish hanging out below the dam. There was enough substrate near the shoreline for potential spawning spots. And flows, extra tricky at times on this northernmost end of the system, could at least at times be high enough. When snowmelt is very high, there's too much flow and dam gates need to be completely opened, leaving water control operators unable to particularly target the shoreline for flow. Too little spring melts might mean not enough flow to get to the preferred velocities, noted Steve Clark, a fisheries biologist leading the team.

The St. Paul District team will next map the substrate using special side scan sonar imaging to get a better idea of what exists below the surface. They'll then work on hydraulic models to see what velocities they'll be able to achieve and under what conditions they can manipulate the gates.

Another lock and dam showing promise is Lock and Dam 25, not far from Mel Price. But while there may be flow similarities, there are major differences between the locks—Mel Price built in the 1980s and Lock and Dam 25 in the 1930s. On the newer one, gates are remote operated, the other, manually set and requiring lock operators to walk down the dam to set gates.

Errett said he's been contacted by representatives of the Lakes and Rivers Division looking to see if they might replicate the experiment as well for spawning success at sites on rivers like the Cumberland and Ohio river systems. His ultimate goal is to have every Corps facility asking if they can do something better, and he's confident this study will lead to spawning elsewhere.

"I have found this project to be the most enjoyable part of my engineering career," he said. "It's the most instant gratification you can have in any engineer process. You have a positive result, and it's a success immediately. Being able to stay involved and see younger engineers involved and see their excitement as well has been great. With this, you have the perfect combination of low cost and high benefit." —K.S.

**ATOMIC LEGACY**

## Cleanup Task Falls to U.S. Army Corps of Engineers

A stream that winds through suburban areas northwest of St. Louis was a favorite swimming spot for neighborhood children in the last century. Unfortunately, the narrow, tree-lined waterway had a dark secret: radioactive pollution.

Coldwater Creek is among more than two dozen sites around the nation that were contaminated during the Manhattan Project—the top-secret World War II program to produce an atomic bomb—and for decades afterward, as the United States developed nuclear energy for peaceful purposes.

Nowadays, the waterway is a focal point for citizens worried about lingering danger from those long-ago efforts. It's also a priority for the U.S. Army Corps of Engineers, which is responsible for restoring 20 locations in eight states that still have residual radiation. Several are in the St. Louis area.

The Corps says none of the sites pose an "imminent health risk to the public or environment." But initial cleanups didn't meet modern standards, and officials want to bring the places up to levels that would make them suitable for businesses, housing or other purposes.

Tainted soils "will remain radioactive for thousands of years, and health risks could increase if the use of the land were to change," says a Corps website describing the Formerly Utilized Sites Remedial Action Program, or FUSRAP.

The Army Corps is perhaps best known for its many roles in maintaining and improving the nation's water infrastructure through tasks such as operating dams, inspecting flood-control levees and dredging harbors to assist commercial navigation. It also has environmental sustainability missions, from invasive species control to restoring degraded ecosystems.

Congress transferred responsibility for FUSRAP cleanups from the Department of Energy to the Army Corps in 1997. The Corps has been working on them ever since, primarily by removing contaminated soil and other debris and hauling it to licensed disposal facilities. A report by the U.S. Government Accountability Office estimates the total cleanup cost at $2.6 billion.

"It's a commitment thing," said Phil Moser, FUSRAP and environmental program manager for the Corps' St. Louis District. "The Corps is a representative of the federal government. And we definitely acknowledge that the activities from history have affected this area. We're here to make sure that it gets fixed."

From 1942 through 1957, uranium and radium were extracted from ores at the downtown Mallinckrodt chemical plant. Residues from the processing were stored on a 21.7-acre tract near the St. Louis airport.

Those residues later were sold to a private company for recycling and moved elsewhere. Structures at the airport site were torn down, buried and covered with clean soil, but poor handling, transportation and storage allowed contaminated dirt and other materials to taint hundreds of properties in the area.

The Mississippi River wasn't significantly affected, Moser said. Early on, contamination from a uranium refinement plant was flushed into a sewer that drained to the river, but its massive flow easily diluted the pollution. Cleanup work was done on the riverbank near the former sewer outfall and more is planned.

The situation was different for Coldwater Creek. Poorly stored radioactive material washed into the waterway near the airport and was carried north through St. Louis County. The creek empties into the Missouri River upstream from its confluence with the Mississippi.

Some people who grew up in the area and played in the creek as children believe radiation exposure caused cancer, autoimmune diseases and birth defects. A 2019 report by the federal Agency for Toxic Substances and Disease Registry found that regular contact with the creek might have slightly boosted the risk for some cancers.

A nearby elementary school closed in 2023 after a biased report was published claiming radioactivity was detected in the building and on the playground.

The Army Corps last year removed tens of thousands of cubic yards of contaminated soils and sediments from the creek bank and other sites, including the airport and landfill. More work is being done this year.

At present, no new contamination is going into Coldwater Creek or either river.

"That's a common misconception out there, that the water's contaminated and every time it rains or floods that it recontaminates," Moser said. "However, that's actually not close to the truth."

Even so, an Army Corps team re-tests the water during and after significant rainstorms, said George Stringham, public affairs chief for the St. Louis District. It's part of an effort to rebuild public confidence that was damaged as the extent of the pollution was being discovered.

"Our ability to work with the public does directly affect our mission," Moser added, particularly because some of the areas needing cleanup are on private land. "We need to make sure we continue to build on the trust that we've gained over years and years of executing on this."–J.F.

WOOD: COURTESY YOLANDEA WOOD. OTHERS: U.S. ARMY CORPS OF ENGINEERS.

## *My* MISSISSIPPI

**Yolandea Wood,President, St. Louis chapter of Tuskegee Airmen, Inc.; Mississippi River Water Trail Association volunteer; Shiloh, Illinois**

"After I retired from the Air Force in 2006, I got a teaching job in St. Charles, Missouri, which is where I met Joan Zerr Twillman. She invited me to paddle with her and her friend Carol Heddinghaus, and I've been paddling ever since. Joan and Carol have so much belief in me.

"We paddled the Mississippi from Source to Sea in 2017, starting at the headwaters in Lake Itasca, Minnesota. Joan had to pull out in St. Louis because of her husband's health, but Carol and I paddled all the way: 2,200 miles in 64 days, with only one day not on the river.

"We've also done the MR340 [a 340-mile race on the Missouri River] four times, finishing each time. I would love to do another river, another challenge. Joan is the logistics guru. She will say, 'Hey, do you want to paddle XYZ?' I trust her implicitly so I have expanded my river repertoire thanks to her.

"I'm a Level 2 kayak instructor/safety boater, and help out at races and other events sponsored by the Mississippi River Water Trail Association. The association partners with other groups, such as Black Folks Who Hike. Black folks who hike also paddle! We take underrepresented groups out on the river or a lake, and give them a safety lesson and a taste of kayaking. Now they have a role model. This can expand their horizons and encourage them to think, 'If I can paddle this river, I can do other things, too.'

"My Mississippi River is a pathway to tomorrow. It offers so many opportunities, so many challenges, so many ways to interact. If I did the Source to Sea again, it would be totally different because the river changes and people change. The river is constantly surprising. It inspires me to sing off key about all the eagles we see along the way, making up words as I go." —B.O.

### DID YOU KNOW?


**Fred Newton** of Clinton, Oklahoma became the first person to swim the entire length of the Mississippi when he was 27 years old. Newton set off swimming on the morning of July 6, 1930 in search of fame and wealth, but according to an article in Smithsonian Magazine, he first had to traverse floating mats of manure and stinking animal parts from South St. Paul stockyards.

The budding artist painted signs in trade for beds along the way, and on Dec. 29 reached New Orleans after covering himself near the trip's end with axle grease and wool underwear to combat the frigid cold. He didn't get wealthy from the swim, but went on to sell insurance and orthopedic products and live to 89!

FROM FAR LEFT: The Indiana bat (*Myotis sodalis*) winters in caves and spends summers in forested areas. It's named myotis (mouse) because of the way its rounded ears resemble one. It's tiny too—just 3.2 inches in length and up to a 10.5 inch wingspan. These acoustic monitors are installed at the U.S. Army Corps of Engineers' recreation area, Mark Twain Lake. They can record and identify the sound of passing bats; so far, 12 species have been picked up including the rare Indiana.

# Coming Home to Roost

## A U.S. Army Corps of Engineers lake project is working to make their recreation area more welcoming to summer visitors, including an endangered population of bats.

***Mark Twain described his fondness for bats*** in gushing terms, writing things like "A bat is beautifully soft and silky. I do not know any creature that is pleasanter to the touch."

In disbelief that his own mother didn't share his affection, he spoke mystified of her reaction to him bringing them home: "She was always cold toward bats... and yet I think a bat is as friendly a bird as there is."

It's particularly fitting then that one of today's most endangered critters—the Indiana bat—is experiencing a slight comeback at both a lake named after this Mississippi River literary legend and in a cave in his hometown of Hannibal, Missouri.

The Sodalis Nature Preserve on Hannibal's southern edge serves as a winter hibernaculum for a growing number of Indiana bats, in a recent count totally more than 230,000. They hibernate inside a maze of tunnels along the Mississippi River. But when they emerge in late spring, many venture the 30 miles to Mark Twain Lake, where the U.S. Army Corps of Engineers runs a recreation program, does forestry work to boost benefits to various species, and is currently running a study on visiting bats. The goal on these 30,000 acres of forest, grassland and shoreline: offer a great recreational spot for humans but ensuring bats and other critters can still thrive.

"The bat population in Sodalis Park is one third of the entire Indiana bat population," notes Madeleine Thompson, a wildlife biological science technician for the U.S. Army Corps of Engineers working on forest management. "For a species that's endangered, that is huge. If we can do something at Mark Twain Lake, where we know they come, this can be super beneficial."

A 2024 report by the U.S. Fish and Wildlife Service shows a nine percent increase in the Indiana bat population at Sodalis Nature Preserve since 2022, Thompson said, adding: "Hopefully we can contribute to the trend with our work."

Indiana bats reach just three inches in length. Their populations have been on the decline since the 1960s, but like other bat species in the country they were almost decimated by an outbreak of a disease called White Nose Syndrome that spread through hibernaculums where bats live in extremely close quarters during the winter. This disease causes them to wake early from hibernation, deplete fat resources and starve. By 2011, the disease had caused the death of an estimated 5.7 to 6.7 million bats across eastern North America with mortality estimates exceeding 90% in infected caves.

Any population rebound is considered great news, Thompson notes. Rebounds have been attributed in spots like the nearby Mark Twain caves thanks to increased protection. The city of Hannibal teamed with other organizations including The Conservation Fund (which helps fund the Corps work) to buy the Sodalis cave in 2016 as part of a city park so it could better keep out adventure seeking trespassers who created extra disturbances during hibernation.

A U.S. Fish and Wildlife Service study tracked where the bats went after hibernation, following colonies by plane. What they found, says USFWS researcher Vona Kuczynska, is that many did head to Mark Twain Lake (and elsewhere), following forested areas and traveling quickly—making the trek in sometimes a single night.

The Corps and its partners are looking to manage the forests and open lands around the lake where the bats head to offer suitable summer habitat with the types of trees in which bats love to roost as well as provide clearer flight paths, Thompson says.

A first step at Mark Twain Lake is finding out what bats are heading there currently, and to what parts of the project. Generally, they begin to leave caves and migrate to wooded areas around April and move to summer roosting habitat of dead trees, called snags, and those with peeling bark such as hickory and white oak.

Through a Conservation Fund grant and in partnership with the U.S. Fish and Wildlife Service, the Corps has set up acoustic monitors atop tall poles across the project. When bats fly by, the monitors capture their distinctive ultrasonic calls. The recorded information is uploaded onto a computer, and a software system matches the sound to the bat species. That data is used to inform forest stand improvement plans and grassland management practices across Mark Twain Lake. Here, the U.S. Army Corps of Engineers serves five missions to the public, two of which are recreation and responsible environmental stewardship. That currently includes running a study on the visiting bats.

Where bats are found to frequent, the plan calls for creation of snags, favored by bats for roosting, promotion of diverse understory establishment, prescribed burning and the planting of native plants that support the insects bats like to eat. They're also thinning some tree canopies to improve bat flight paths.

There are two years left on the initial study, and while the Corps is working to gather more data on location and presence of important bat species, project and lake employees are supplementing monitoring with education. There's been a resurgence of interest, Thompson says, in the cool creatures of the night and their comeback.

"Most people just think they're scary, or they had one in their attic," she said. "We try to share how they navigate through their environment using echolocation and let people know a bit about bat calls, adding how we like them because they manage the insect population. We tie that into why we do forest management and how we plant pollinator and native prairie plants to host insects and help the bats. It's not just the Corps burning or chopping trees. There's a reason and purpose." —K.S.

## BAT FACTS

Bats:

- Can live 30 years or more
- Can find food in total darkness
- Eat up to 1,200 bugs an hour
- Are in severe decline around the world or listed as endangered
- Hibernate in caves through winter
- Have babies called "pups"
- Have had their guano used in early days to make gunpowder
- Are the only flying mammal
- Fly over 100 mph
- Aren't really blind but use echolocation to help them navigate and forage for food

COURTESY NPS

# MR&T at 97

**ON MAY 15, 1928,** Congress passed the 1928 Flood Control Act, which authorized Chief of Engineers Maj. Gen. Edgar Jadwin's plan of improvement for the lower Mississippi valley. This landmark piece of legislation was in response to the Great Flood of 1927, the most destructive flood disaster in our nation's history. The flood left more than 500 dead, another 700,000 homeless, and 27,000 square miles in the Mississippi valley underwater. The damages were so great that they equaled one-third of the federal budget for that year. Were a similar flood to occur today, the damages would exceed $1 trillion!

Over the next year, all the greatest engineering minds in the nation sought to understand why this disaster had occurred and how to prevent a similar disaster from ever occurring again. After months of Congressional hearings and testimony from expert witnesses, the record of which encompasses thousands upon thousands of pages, Congress chose the plan of Chief of Engineers Edgar Jadwin, with the Mississippi River Commission overseeing the execution of the plan. Over the decades that followed, Congress modified Jadwin's plan until it evolved into what is now the Mississippi River & Tributaries Project (MR&T).

In 2011, the Mississippi River was swollen with volumes of water not seen since the Great Flood of 1927. In that single event, the multi-generational investment in the MR&T paid for itself several times over. Other than the extraordinary amount of water flowing through the lower Mississippi valley, thanks to the MR&T, the 1927 and 2011 floods had little else in common. Unlike the 1927 Flood, there were zero deaths. The MR&T also prevented flooding on more than 10 million acres that were ravaged by the 1927 flood. In total, since 1927, the MR&T has prevented more than $4.9 trillion in damages—and counting—which is a return on investment of $134 for every dollar invested.

Below are just a few of the MR&T's many economic benefits that generate tens of billions of dollars annually for the region and support tens of thousands of jobs. The MR&T protects:

Energy: 108 power plants, 12 major oil refineries, nearly 34,000 oil and natural gas wells, and more than 4,500 miles of natural gas pipelines.

Commerce: 4,364 miles of highways, 2,364 miles of rail, 563 manufacturing facilities, and 4 of the top 15 deep-draft ports in the nation, including the Port of South Louisiana, the busiest port in the western hemisphere, all lie within the areas protected by MR&T levees.

Agriculture: MR&T levees protect 22.5 million acres of prime croplands that generate $8.7 billion in annual revenues and employ 56,000 people. The navigability of the river also allows this agricultural output to be shipped via the most efficient and cost-effective means, allowing these products to compete on the global market and for cost savings to be passed along to domestic consumers.

Critical infrastructure: MR&T levees protect 4.5 million people, 1,147 schools, 91 colleges, 646 fire stations and 346 police stations, 102 hospitals and 240 nursing homes, 158 airports and 86 heliports.

The benefits of the MR&T extend well beyond the lower Mississippi River alluvial valley. Thanks to a multi-generational commitment of our ancestors, the vast riches of the American interior can be transported via the inland waterways system to global markets so that our blessings can be shared with the world.

The nexus of this vast watershed, where all the water and riches of the nation's interior converge, is the lower Mississippi River. And yet, despite its value to the nation, after 97 years the MR&T system that protects this vital stretch of river is still not complete. Another $6.4 billion is needed to for the MR&T to pass Project Design Flood. More than 550 miles of MR&T levees are still below project grade and numerous critical maintenance items must be addressed for the system to function as designed.

We stand on the shoulders of giants who have built a system that is the envy of the world. But we cannot rest on their achievements. We must look forward to the next 100 years of the project and finish what our predecessors began, so that the next 100 years will be as successful as the last. — BRIAN RENTFRO, HISTORIAN, CORPS MISSISSIPPI VALLEY DIVISION

HENDRIX: COURTESY LEE HENDRIX. OTHERS: U.S. ARMY CORPS OF ENGINEERS.

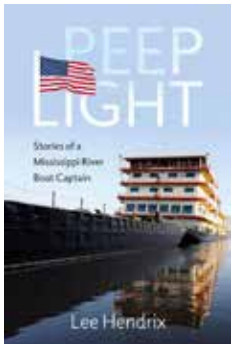
## My MISSISSIPPI

**Lee Hendrix, Author, "Peep Light: Stories of a Mississippi River Boat Captain" Lake City, Minnesota**

"The river had everything that I lacked. It was majestic, powerful, beautiful, and free. Like Tom Wingfield in 'The Glass Menagerie,' I wanted to escape from St. Louis and seek adventure.

"I started out as a deckhand in 1972. On my first night on the river, I thought the mission was to kill Lee Hendrix. They kept banging into things, and here I thought we were going to be singing "Ole Man River." I didn't sleep for five days.

"A friend told me once that working on the river is long stretches of utter boredom punctuated by moments of spine-tingling chaos. It can lull you to sleep, but danger can come like a wolf out of the brush to bite you. You can't be complacent. My favorite time on the river was when nothing scary happened, but my most vivid memories are when the wolves came out.




"In 1976, I received my first license to work as a pilot. Others had let me steer the boat while they went to the bathroom, or took a break on the liar's bench. I didn't crash, so began the long process of me being promoted to pilot. Piloting a boat, a person works 12 hours a day and gets four hours of sleep, four and a half at best.

"I left the river for a while in the 1980s. I came back in the 1990s as a pilot, working on casino boats in the Midwest and the passenger steamers American, Mississippi and Delta Queen until the company went out of business this past February. I was working on the American Queen when Hurricane Katrina hit New Orleans.

"In between stints on the Queens, I worked with the U.S. Army Corps of Engineers for nine years on the flagship Motor Vessel Mississippi. I later retired to return to piloting passenger vessels.

"I love to share stories of the Mississippi. I consider myself a "riverlorian," a confluence of historian with storyteller, something I loved to do on the steamboats. I engaged passengers about the river with stories, some of which were even true. It is said that river men never tell the complete truth. If they do, they lose one of their ears. But I still have both of mine." —C.D.C.


Kacie Grupa

# Picture Perfect Restoration

## Photo contest offers glimpse of nearly 40 years of science and restoration work on the Upper Mississippi.


Kyle Von Ruden

There's beauty in the restoration and monitoring of the Upper Mississippi River—and literally so. A multi-agency partnership run by the U.S. Army Corps of Engineers showed this strikingly through a 2024 photo contest, one limited to those who spend their days doing the monitoring itself.

The numbers by themselves are impressive enough: 121,400 acres restored over 83 projects with another 70,000 acres of restoration in the works. Beyond that, there's a research database considered the most comprehensive of any large river system in the world.

But Marshall Plumley, regional manager of the Upper Mississippi River Restoration program, said the communications team wanted to expand beyond traditional methods of outreach. They wanted to help the public, at just a glance, get a sense of a massive project that has set a restoration standard for the rest of the Mississippi River watershed—and the world.

As the well-worn adage goes: A picture speaks a thousand words.

Fish biologist and geneticist Kyle Von-Ruden hopes you might be captivated enough to support restoration work once you glance at the photo he shot of his 12-year-old daughter Sophie holding a lake sturgeon that resembles a small swimming dinosaur. It gets the importance of conserving a species that dates back some 136 million years perhaps more than the sharing of more scientific detail about the first-of-its-kind lake sturgeon spawning reef he's working on in Pool 4. It even made this resource manager think a bit differently of what he does.

"When we caught the fish (and released it), I thought it was pretty cool," he said. "I didn't know where it spawned, but it made me think of where I caught it compared to where this new habitat project will be less than 10 miles away. There's so much potential, and it's such a neat species."

Photos like a pair of great blue herons in a graceful spring mating dance similarly can do what more typical government outreach can't, adds Ken Peterson. His work as a geospatial and emergency management specialist with the Upper Mississippi River Basin Association focuses on mapping spots where there might be hazardous spills as well as valuable spots needing protection from contamination. But in another career he was a teacher who brought students to a Minneapolis park overlooking a tiny Mississippi River island where herons would nest. That immediately came to mind as a good spot for photo contest fodder—and to offer a broader teaching moment as well.

"There's something about the natural world and its beauty and complexity that grabs people's minds, grabs their senses, inspires them, educates them. It makes people a little more inclined every time they witness something to say, 'the natural world is a thing worth taking care of.'" —KENNETH PETERSEN, UPPER MISSISSIPPI RIVER BASIN ASSOCIATION


Kenneth Petersen


Alicia Carhart

"There's something about the natural world and its beauty and complexity that grabs people's minds, grabs their senses, inspires them, educates them. It makes people a little more inclined every time they witness something to say, 'the natural world is a thing worth taking care of.' Next time a vote is to be cast, a decision to be made, to say 'I'm on the side of taking care of the natural world because the natural world takes care of me.'"

Some of the winning photos showcase the direct impact of a particular project. Such is the case with Harper's Slough, subject of U.S. Army Corps of Engineers St. Paul District hydraulic engineer Kacie Grupa's winning photograph of lush vegetation with the rolling hills of Wisconsin's Driftless area as the backdrop. Had she taken the photo before this island and wetland restoration project was initiated, all you would have seen is open water. Now, this lush wetland teams with amphibians, turtles, fish.

Alicia Carhart of the Wisconsin Department of Natural Resources shot the winning photo in the Cultural Resources category, capturing thick beds of wild rice, a favorite nesting locale for the migrating birds of Pool 8, and used where allowed for First Nation Ceremonies. Her second winning photo of Long-term Resource Monitoring, shows a restoration partner measuring water quality on the ice. It hints at the dangers inherent in resource work but also the benefits: What you can't see is dramatic improvement in water quality—something partly responsible for the way the wild rice is thriving as well.

The next contest will engage the public and offer anyone a chance to capture the magic of the Mississippi. While the program doesn't specifically improve or monitor habitat for recreational benefits, most projects take place in or around USFWS refuge land.

"There's an incredible diversity of human interactions with the river, whether it's boaters, anglers, hunters or folks like bird watchers who just want to be out in the resource and the environment," Plumley said. "While we're not developing and designing projects to benefit these folks, the people who are on the river on a regular basis can give us a lot of insight on how the ecosystem is changing over time. They have as much experience as our biologists and resource folks, just from a different perspective." —K.S.


Alicia Carhart

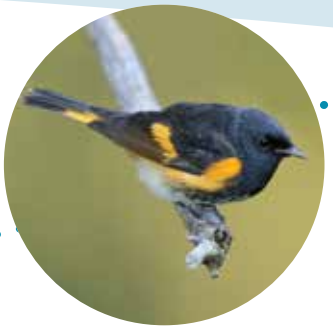
TOP, FROM LEFT: Kacie Grupa of the U.S. Army Corps of Engineers won in the category showcasing Habitat Rehabilitation and Enhancement Projects. These great blue heron, in a mating dance, made for a winning "landscapes" shot by Kenneth Petersen of the Upper Mississippi River Basin Association. Lush paths of wild rice, shot by Alicia Carhart of the Wisconsin Department of Natural Resources, won in the category of "Cultural or Historic Features." BOTTOM, FROM LEFT: Kyle Von Ruden of the U.S. Fish and Wildlife Service took this shot of a lake sturgeon. Alicia Carhart won a second award for her photograph illustrating monitoring in action.

Prothonotary Warbler

Red-shouldered Hawk

Warbling Vireo

Willow Flycatcher



American Redstart

# Counting Forest Birds

## *Experts play "Name that Tune" to benefit River Science.*

The kayak glides quietly through pre-dawn chill and thin fog as it crosses the slough to Maple Island. Faint chirps and songs begin to float from dense tree cover as the sun peeks over the Illinois bluffs lining the Mississippi River below Alton.

"Once we dock to the island, the 'good morning' chorus starts coming from all the birds singing. On most mornings the sound is overwhelming," said Tara Hohman, a National Audubon Society conservation science manager. "On a good day we can detect 30 or 40 species in one little section of an island."

Millions of forest birds—40% of North America's migrating fowl—follow the habitats along the lush Mississippi River Flyway. Their populations and habitat usage are studied each spring through the Bottomland Avian Monitoring Program, a joint project of the Audubon Society and U.S. Army Corps of Engineers.

Audubon surveyors, listening for unique songs and calls, have identified 160 bird species on the Upper Mississippi. The monitoring program counts all species with a focus on the nine "focal species" that use critical floodplain habitats. Stable populations have been found for the red-shouldered hawk, willow flycatcher, warbling vireo, cerulean warbler, prothonotary warbler and yellow-breasted chat. That's not true for a couple of others including the stunning indigo bunting.

"We deduce that red-headed woodpeckers are increasing due to the additional availability of dead trees (the preferred nesting habitat) resulting from the 2019 floods," Hohman said. "Reasons for the decline of redstarts and indigo buntings is less clear. It could be a factor of breeding success or issues faced during migration or on the wintering ground."

"We can plot species occurrence at a site over years to see how natural disturbances or forest management actions are related to population changes," said Brian Stoff, a Corps forester. "This data can influence our habitat management and forestry work to benefit specific species."

Each spring Maple Island becomes a 2.5-mile-long aviary within the Riverlands Migratory Bird Sanctuary. Monitoring is conducted from mid-May to Mid-July. The birds are identified only by their calls.

"This is the peak breeding season. Birds are courting and defending territory. The numbers of species and individuals are vast," Homan said.

The Audubon Society and Corps of Engineers launched the study in 2012 to gauge the health of bird populations on nearly 50,000 acres of Corps lands. Expert bird listeners visit 25 islands and adjacent lands reaching from the Audubon Center at Riverlands Migratory Bird Sanctuary, across the river from Alton, north to the city of Louisiana, Missouri. The area covers 120 miles of the Mississippi and Illinois rivers.

Focal species populations are estimated at 23 million in the five Upper Mississippi River states. These range from common—16 million indigo buntings—to uncommon: fewer than 100,000 red-shouldered hawks, prothonotary warblers and cerulean warblers. All focal species except the red-shouldered hawk are seasonal visitors.

Major habitats visited and evaluated include:

- Floodplain forests, flooded during most of the growing season and which predominately contain silver maple with elm, cottonwood, black willow and silver birch.
- Lowland forests, which flood early in the growing season. Common trees include pecan, hickory river birch, sycamore and oaks.
- Populous communities, a lowland flooded for most of the growing season. More than half of trees are cottonwood.
- Salix communities that live along shorelines that are under water for most of the growing season and consist mostly of willow, emergent grasses and flowering plants.

"We are measuring trees and recording species to see what is out there," Stoff said. "As a forester, I do land management to provide high-quality habitat for wildlife. After Tara does the monitoring, she turns the data over to us so we can see if the focal species are improving, declining or maintaining population levels. Then we can adjust our management actions."

Some monitored locations have undergone a Habitat Rehabilitation and Enhancement Project, or HREP, overseen by the Upper Mississippi River Restoration program and conducted by the Corps.

"We are doing the same kinds of surveys on areas where there has been an HREP or other management actions," Hohman said. "We compare the findings of those to areas that have not had management to see if there are differences in the bird communities."

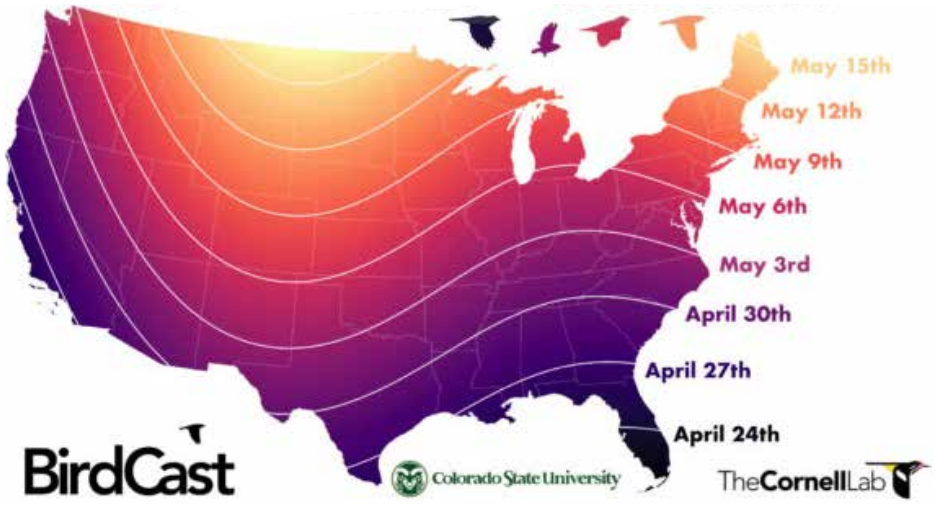
### Name that tune

Avian monitors typically arrive at the day's site at sunrise and depart before noon.

Some birds can be heard 150 meters away, quieter chirpers only 50 meters. Surveying protocols define acceptable levels of background noise, Hohman said. "If the noise level hinders our ability to pick up bird songs, we wait for it to stop or come back another day. We don't survey if the wind is over 12 miles an hour. If we can't identify birds we cannot collect good data."

If the monitors are really baffled by a rare song, they refer to Merlin, a popular birdwatcher's app based in the Lab of Ornithology at Cornell University in Ithaca, New York.

"It's a rare day that we have clear views of the birds," said Hohman, who has learned to identify dozens of species by chirps and songs alone. "I've been birding for about ten years. I can recognize 40 or 50 that are the most common on the river and quite a few more. It's really exciting to hear a rare bird. It stuns you. Then you start running through your memory to figure out who it is." —R.S.




CREATED BY BIRDCAST PROJECT. USED WITH PERMISSION.

**Estimated Populations of Focal Species**
***Upper Mississippi River Valley: Missouri, Illinois, Iowa, Wisconsin, Minnesota***

| | |
|---|---|
| Indigo Bunting | 16,030,000 |
| Warbling Vireo | 2,430,000 |
| American Redstart | 2,288,000 |
| Yellow-breasted Chat | 964,830 |
| Willow Flycatcher | 448,000 |
| Red-headed Woodpecker | 355,000 |
| Red-shouldered Hawk | 98,710 |
| Prothonotary Warbler | 45,790 |
| Cerulean Warbler | 15,390 |

Source: Partners in Flight Avian Conservation Assessment and Population Estimate Database

Indigo Bunting

Redheaded Woodpecker

Cerulean Warbler

Yellow-breasted Chat

***Flashes of color and trilling song mark a special season on the Mississippi River as birds make their annual spring migration, bringing joy to the winter-weary. Here are some tips for making the most of your spring birding forays.***

## Where to Look

The Mississippi River is an exceptionally rich place to find birds. The main river and its tributaries anchor the Mississippi River Flyway, which hosts an estimated 325 species. About 40% of the migrating waterfowl and shorebirds in North America use this flyway to move between wintering areas and breeding grounds.

Here, birds find abundant food and resting places to fuel their arduous trip north. The river's wetlands, side channels, backwaters, islands, bottomland forests, upland forests, and prairies offer habitat for diverse species.

Public lands along the Mississippi offer ready access for birders. Federal, state and local agencies manage millions of acres of parks, forest, and wildlife refuges. For example, the U.S. Army Corps of Engineers makes 50,000 acres accessible to the public in Louisiana's Atchafalaya Basin Floodway System project. Nature centers and state natural resource departments are great resources for finding the birding hotspots near you.

## When to Look

So when will those northbound birds arrive? Broadly, most spring migration falls between March 1 to June 15, according to the team at BirdCast, a collaboration of interdisciplinary researchers from the Cornell Lab of Ornithology, Colorado State University, University of Illinois and University of Massachusetts Amherst and their partners. The team has mapped the average peak migration dates across the United States and identified the peak spring migration periods for 1,000 U.S. cities.

Different bird species migrate at different times. Waterfowl (such as ducks and geese) and some songbirds that migrate short distances (such as some blackbirds and sparrows) can start moving in March. Birds that winter in the southern United States or northern Mexico tend to arrive earlier than long-distance fliers that start out from Central and South America. The local availability of food such as insects and caterpillars also influences arrival.

In the eastern U.S., migration happens in three waves, said Ryan Jacob, lead bander at the Black Swamp Bird Observatory. The BSBO bird banding team has been tracking bird migration through the Midwest for more than 30 years. That data set revealed the pattern of three waves of migration.

The first wave includes early arriving songbirds, coming from the southern United States and northern Mexico. They appear from early April into May. They are often seed eaters. The second wave includes the birds that have wintered further south in the tropics. They arrive through May, taking advantage of the first flush of insects. The third wave, arriving when spring is in full force, are those species that depend heavily on insects, especially those that catch them mid-air such as the flycatchers and boreal breeding birds that migrate to the farthest extents of Northern hemisphere forests, taiga, and tundra.

For the latest bird movements, check out the live migration maps generated at birdcast.info. The maps show bird migration intensity in near-real time, but these maps do not identify birds by species. They do pinpoint the location and number of birds migrating across the United States each night during migration season. The data underlying these maps come from the U.S. weather surveillance radar network, represented by 143 radars operating continuously in the continental U.S.

"The live migration map is the only place you can find a visualization of continental to local scale bird migration as it happens at night in the U.S.," said Dr. Andrew Farnsworth, visiting scientist from Cornell Lab of Ornithology, who has worked for more than 25 years on the BirdCast project. "The staggering numbers are eye opening, even to those of us with extensive migration experience: 2.5-3.5 billion birds migrating at night over the U.S. every spring; 4-5 billion every fall. And the largest individual nights can (so far) have up to 1.2 billion on a single night."

## Who to Look For

Every birder has a favorite spring migrant. Farnsworth looks forward to the arrival of the magnolia warbler, with its jaunty black "necklace." Jacob favors the hooded warbler and its black hood surrounding a yellow face and the sweet songs of the white-throated sparrow and fox sparrow.

Help in identifying the mystery visitor in your backyard or local park is available through numerous print and on-line bird guides. Audubon's on-line Guide to North American Birds can be narrowed to birds in your state. Happy birding! —D.D.

BIRD PHOTOS: CREATIVE COMMONS VIA WIKIMEDIA AND OTHER SOURCES. OTHERS: U.S. ARMY CORPS OF ENGINEERS.

## Does your coastal home qualify for a lift?

This Lake Charles ranch home owned by Ricardo and Marjorie Baca got a lift—literally—through the project known as the Southwest Coastal Louisiana Storm Risk Management and Ecosystem Restoration Project. Theirs is the first home to be raised in the first phase of a $6 billion project to help to keep homes from flooding in coastal areas around Lake Charles, Louisiana. Several more are slated to be completed by mid-May, and there is funding for many hundreds more.

People who live in the parishes of Calcasieu, Cameron, and Vermillion can go to the website: https://www.mvr.usace.army.mil/swcoastal/. Look to the left side of the page under Application and click on the link, "Is My Property Eligible?" There, you will find a spot for entering your address and seeing if your home or business qualifies. If so, the project funded by the state and federal government will cover the entire cost of lifting the home. Homeowners and business owners are only responsible for getting the building up to code, if it is not already, and finding alternate lodging while work is being completed.

If it sounds too good to be true, project managers say that lifting one house at a time has proven a far more cost-efficient way to keep people from the path of a 100-year flood (or beyond) than constructing a levee system in this and other more rural areas. It's already proving successful enough that it's being used as a model for other coastal areas around the nation.


## PRAIRIE MATCH-MAKER

# Pollinators and their Plant Partners

With the melting of winter into spring, prairies begin to come alive along the Mississippi River and its basin. The first native plants begin blooming in mid-March and different species will continue to flower until fall when the cold returns. The explosion of colors may be pretty to us, but these colorful plants provide important habitat for many wildlife, including pollinators.

Common pollinators include bees, butterflies, wasps, moths, birds and even bats. These are important animals because they help plants reproduce through spreading pollen between flowers and plants. But have you ever wondered why certain pollinators seem to be attracted to one plant but not another? The relationship between plant and pollinator is interesting!

Generalist plants and pollinators are those who can visit any flower or be pollinated by many different species. However, some relationships are more specialized. Through a process called co-adaptation, some plants and pollinators are connected like puzzle pieces. For example, prairie phlox has flowers like a long vase, with nectar at the bottom. Pollinators with long tongues, like bumble bees or butterflies, are the only ones who can access the nectar and collect pollen. Similarly, some insects can only survive on certain plants, called host plants. A common example is milkweed and the monarch butterfly whose caterpillars need to eat the milkweed's sap so they can grow.

Some pollinators have color preferences as well, such as bees leaning toward blue or yellow flowers with sweet fragrances, hummingbirds red ones, and butterflies, anything brightly colored and growing in clusters. —M.T.

***Now it's your turn to play some prairie match-making. Draw a line to connect the pollinator to its favorite plant in the meadow below!***

Eryngium Stem-Borer Moth

Monarch Butterfly

Common Wood Nymph

Sweat Bee

Miner Bee

Wasp

Black Swallowtail

Eastern Tiger Swallowtail

Flower Moth

Common Eastern Bumble Bee

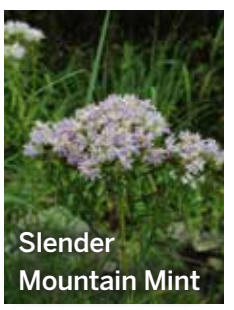
Leadplant

Little Bluestem

Wild Bergamot

Prairie Blazing Star

Prairie Phlox



Slender Mountain Mint

Milkweed

Rattlesnake Master

Shrubby St. John's Wort

Golden Alexander

SOLUTION

| Pollinator | Native Plant |
|---|---|
| Monarch Butterfly | Milkweed |
| Miner Bee | Leadplant |
| Eryngium Stem-Borer Moth | Rattlesnake Master |
| Bumble Bee | Shrubby St. John's Wort |
| Sweat Bees | Wild Bergamot |
| Flower Moths | Prairie Blazing Star |
| Eastern Tiger Swallowtail | Prairie Phlox |
| Common Wood Nymph | Little Bluestem |
| Black Swallowtail | Golden Alexanders |
| Wasps | Slender Mountain Mint |

# Unforgettable Festivals along the Mississippi River

*Experience the river in a new way through these community celebrations*

It's no secret that the rolling headwaters of the Mississippi River offer plenty of inspiration. For the many communities established along its banks, the river serves as an unparalleled setting for both recreation and celebration. From high-flying hot air balloons and soulful jazz to celebrations of German culture and American literature, towns along the Mississippi River have made the river the site (and often inspiration) of their seasonal celebrations. So, mark your calendar for these incredible festivals that are sure to give you a new appreciation for the beauty of the Mighty Mississippi and the communities located along its banks.

### Natchez Balloon Festival in Natchez, MS

*Save the date: October 17–18, 2025*

Experience a stunning new view of the Mississippi River during the Natchez Balloon Festival in Natchez, Mississippi. This weekend of colorful hot air balloons draws thousands of locals and visitors both to the banks of the Mighty Mississippi, and has become one of the largest festivals in the region. The festival, which will celebrate its 40th anniversary in 2025, features live music, local vendors, carnival rides and, of course, breathtaking hot air balloon launches and races. Head to the festival grounds early in the morning or late in the afternoon to experience the majestic scene as balloons float high above the river. Or, plan to attend the tethered balloon glow on the Friday evening of the festival weekend. If you plan to attend, keep in mind: hot-air ballooning is extremely weather dependent, so be sure to check official festival information for updates on when and where the balloons will take flight.

### New Orleans Jazz & Heritage Festival in New Orleans, LA

*Save the date: April 23 – May 4, 2026*

Plan ahead to catch the rhythm of the river during the annual New Orleans Jazz & Heritage Festival held each spring. With an incredible lineup of both national touring acts and local favorites, this Big Easy festival is a must-attend for music lovers of all ages. Started in 1970, this popular festival has expanded to a 10-day cultural feast featuring musicians, cooks and craftspeople, welcoming an estimated 400,000 visitors each year. While you'll find a large number of jazz performances, the festival celebrates all types of indigenous music and culture of New Orleans and Louisiana so you'll also encounter musicians playing blues, gospel, Cajun, zydeco, Afro-Caribbean and so much more.

### Oktoberfest USA in La Crosse, WI

*Save the date: September 25–28, 2025*

Raise a stein at one of the country's longest-running Oktoberfest celebrations. Held annually in La Crosse, Wisconsin, Oktoberfest USA is a weekend-long celebration of German culture and, more specifically, German beer. La Crosse's Oktoberfest festivities began in 1961 and have grown over the decades, now spanning an entire long weekend. From a dedicated craft beer night and tapping a golden keg to plenty of live music and festive attire, this seasonal celebration is a fun way to embrace autumn and experience the Coulee region. In addition to the traditional festivities, Oktoberfest USA also features two distinct parades: the Torchlight Parade, a lighted event held on the evening of Thursday, September 25, and the Maple Leaf Parade, a more traditional parade that will be held the morning of Saturday, September 27.

### National Tom Sawyer Days in Hannibal, MO

*Save the date: July 2–6, 2025*

Celebrate one of the most iconic fictional characters to traverse the Mighty Mississippi during National Tom Sawyer Days in Hannibal, Missouri. Held annually over the Fourth of July weekend, this community celebration has been a time honored tradition since 1956. The family-oriented event, which is sponsored and run by the Hannibal Jaycees, allows visitors and locals alike to experience the history of Hannibal through the eyes of Mark Twain. In 2025, this beloved local festival will celebrate its 70th anniversary with themed events like the Tomboy Sawyer Contest, Tom and Becky Contest and National Fence Painting Contest as well as more traditional festival activities like a parade, fireworks display, community 10K race and more.

### Great River Shakespeare Festival in Winona, MN

*Save the date: June 26 – July 27, 2025*

That which we call a festival by any other word would be as enjoyable as the Great River Shakespeare Festival that's hosted annually in Winona, Minnesota. For fans of the Bard, this month-long celebration of Shakespeare's work is something you'll want to snag tickets to as soon as they're available, as many performances do sell out. As part of the 2025 season, the theatre company will perform Romeo and Juliet and The Comedy of Errors. The festival also hosts an annual fundraising event called Callithump, which is billed as a ridiculously fun, boisterous and wildly entertaining production created by members of the company.

### TugFest in LeClaire, IA

*Save the date: August 7–9, 2025*

There's nothing like a little friendly competition to inspire some community-minded fun — at least that's the inspiration for the annual TugFest held in LeClaire, Iowa. This three-day festival features all the summer staples you'd expect, including a carnival, live music, local vendors, a parade, fireworks and more. The main draw is the festival's namesake event: a tug-of-war competition across the Mississippi River with teams competing on the banks in both Iowa and Illinois. Each year, 10 teams made up of 20 people each pull a 680-pound rope spanning 2,700 feet across the Mighty Mississippi between LeClaire and neighboring Port Byron, Ill., to determine which side of the river reigns supreme. —M.B.

Our Mississippi
PARTNERING TO KEEP AMERICA'S RIVER GREAT

US Army Corps of Engineers
U.S. Army Corps of Engineers, Rock Island
PM-Acuff
Clock Tower Building, P.O. Box 2004
Rock Island, IL 61204-2004

PRSRT STD
U.S. POSTAGE
PAID
GREENVILLE, MI
PERMIT NO. 338

## Site Prep Continues on Brandon Road Carp-halting Project

The U.S. Army Corps of Engineers is moving forward with a plan to fortify a crucial waterway in the battle to keep invasive carp from reaching the Great Lakes, although hurdles remain before construction begins in earnest.

The project, with an estimated price tag of $1.15 billion, would place a series of fish-repelling mechanisms at Brandon Road Lock and Dam along the Des Plaines River in Joliet, Illinois, about 27 miles south of Chicago and 40 miles from Lake Michigan. They include underwater noisemakers, a bubble curtain, an electric barrier and a barge cleansing device inside a specially engineered channel.

Brandon Road is a crucial choke point in the waterway chain connecting the Illinois River, which is infested with invasive carp, to Lake Michigan. The plan is intended to turn back any carp that attempt to migrate northward.

While the federal government is picking up most of the tab, the states of Illinois and Michigan are contributing as well. After lengthy negotiations, they signed a partnership agreement last summer that enabled the construction phase to begin. They're also sharing $114 million in costs.

But another holdup surfaced in February, when Illinois Gov. J.B. Pritzker delayed the state's acceptance of the title to the Brandon Road riverbed.

In a letter to the Corps, Illinois Department of Natural Resources Director Natalie Phelps Finnie said the state wanted written assurances that the federal government would come through with its share of the funding.

Illinois says President Donald Trump's administration has withheld more than $100 million in federal funds the state had been promised for other infrastructure projects.

"We cannot move forward until the Trump administration provides more certainty and clarity on whether they will follow the law and deliver infrastructure funds we were promised," Pritzker said.

A hopeful development came in April, when Trump voiced support for the project during an Oval Office meeting with Michigan Gov. Gretchen Whitmer and the speaker of the Michigan House.

"It's sort of a bipartisan thing when you get right down to it," Trump said, according to news reports. "It's a very expensive thing actually. It costs a lot, I looked at the numbers... but we have to save Lake Michigan because these fish, they eat everything in the way."


It was still unclear whether the administration and Illinois would reach the sought-after funding agreement, although the state set a target date of May for completing the land title process.

While that postponement is delaying future work, the Army Corps is continuing tasks that were already underway, said Allen Marshall, spokesman for the Rock Island District. A contract was awarded in December to clear rock in and around the lock and dam, and that work is proceeding.

"The State of Illinois' decision to postpone the property rights closing will result in a delay of future construction on the BRIP until the requisite rights are obtained," Marshall said. "As with any Congressionally authorized USACE project, future construction contracts will need funding provided by Congressional appropriations within individual federal budget cycles. At the district level, we are unable to speculate on future funding, but as an organization we stand poised and ready to execute those allocations as they become available."

Bighead, silver, grass and black carp were imported to the southern U.S. from Asia in the 1970s to cleanse algae from aquaculture and sewage ponds. Some escaped into the Mississippi River and have migrated northward since.

Voracious and aggressive, they crowd out native fish species and damage the aquatic environment. —J.F.

Our Mississippi

To subscribe to our e-edition, read past editions and find river-related education materials, visit https://www.mvd.usace.army.mil/Library/Publications/Our-Mississippi/

US Army Corps of Engineers

**Questions or Comments:**

**U.S.A.C.E. REGIONAL OUTREACH CONTACTS**

Insiyaa Ahmed, St. Louis, Mo. 636.899.0076
Vanessa Alberto, St. Paul, Minn. 651.290.5388
Kenneth Williams, Memphis, Tenn. 901.544.3360
Katelynn Dearth, St. Louis, Mo. 636.899.0086
Allen Marshall, Rock Island, Ill. 309.794.5204

**Mailing list changes:**
Kim Schneider, editor@kimschneider.net

**To read online:**
https://www.mvd.usace.army.mil/Media/Publications/Our-Mississippi/
Click "Subscribe here" to subscribe via email.

**Contributors this issue:**

**EDITOR/ LEAD WRITER**
Kim Schneider

**GRAPHIC DESIGNER**
Diane Kolak

**CONTRIBUTING WRITERS**
Megan Bannister
Cheré Dastugue Coen
Debra Dietzman
John Flesher
Barbara Ostmann
Richard Stoff
Madeleine Thompson