



# THE MIGHTY MISS ISS IPPI

## ALL LOCKED UP

With lagging funds for river restoration and two decades of declining barge traffic, why does the Corps of Engineers want to build *bigger* locks?

BY DAWN MAYHEW MERRITT

*"We caught fish and talked, and we took a swim now and then to keep off sleepiness. It was kind of solemn, drifting down the big, still river, laying on our backs looking up at the stars."*

—From *Adventures of Huckleberry Finn* by Mark Twain, 1885

THE MISSISSIPPI RIVER OF MARK TWAIN'S ERA was well suited to travel by raft. Moving freight up and down the river, however, was a bit more challenging. The Mississippi was full of sandbars, and the water levels were unpredictable due to floods and droughts.

As Americans moved west and the Mississippi River became a critical part of the country's economic growth, the U.S. government stepped in to improve river navigation. Within 50 years, the Army Corps of Engineers — as directed by Congress — had dug channels, built dams, straightened the river bed, and built levees that severed the connection between the river and the land around it. Agricultural shipments down the Mississippi have dropped significantly since those days, but the damage to the river remains.

Perhaps the worst damage came from a project dubbed the Upper Mississippi River-Illinois Waterway (UMR-IWW). In 1930, Congress authorized the Corps to create a 9-foot navigation channel along the northern half of the Mississippi River so barges could move up and down the river more easily. To do this, the Corps built a series of 29 locks and dams between Minneapolis-St. Paul and St. Louis. Mark Twain would never recognize his beloved river today.

## BARGING IN ON WILDLIFE

Structures built to accommodate barge traffic on the Upper Mississippi devastated native fish and wildlife habitat. Gone are the small islands where migrating ducks and geese built their nests and hatched their young. Gone are the shallow ripples of fresh, cool water essential to hatching and juvenile fish. In their place are a series of locks and dams that essentially turned the stretch of river between the Twin Cities and St. Louis into a string of connected pools.

Although these pools may be ideal fishing holes and boating locales because they keep currents and water levels steady, the pools also keep sediment — soil and sand washed into the river from eroded banks and islands — contained rather than letting it flow down river to the Gulf of Mexico. "Wave action" created by barge traffic and recreational boats and the empty barges tied up along the riverbanks increase erosion. Combined, these conditions create a cascade of habitat problems.

For example, wild celery is a critical food source for waterfowl, particularly migrating ducks. Too much sediment in the water blocks the sunlight wild celery (and many other plants) needs to grow, killing the plants and preventing new ones from growing. Research shows a direct relationship between wild celery and duck populations. For example, comparisons of canvasback duck populations in Lake Onalaska (located in the pool created at Lock and Dam #7) found a decrease from 107,500 ducks in 1979 to 49,575 ducks in 1992. According to researchers, the strongest factor in this duck decline was the scarcity of wild celery plants. And without wild celery on the riverbed, more soil erodes, creating even worse water conditions.

Another problem created by water-borne sediment is lack of healthy habitat for fish. Shallow, protected backwaters on the Upper Mississippi are key spawning areas for a variety of fish. When sand and soil build up, the water becomes too shallow for fish habitat — but an ideal home for "nuisance plants," which can cause large fluctuations in levels of dissolved oxygen that fish need to survive. Levees built to straighten out the flow of the river also cut off fish access to protected backwaters in many areas. A 1985 study of largemouth bass in Pool 12 (the pool created at Lock and Dam #12) showed there were few areas left in the pool that largemouth bass, crappie, or bluegill could use as wintering habitat. Study authors determined this loss of habitat was limiting fish populations

and that fish declines would continue without human intervention.

Clams, mussels, and crustaceans that live on the bottom of the river also can't survive in sediment-filled water. These invertebrates are an important food source for fish, other crustaceans, and birds such as migrating Lesser and Greater Scaup — diving ducks that feed heavily on finger-nail clams. Populations of Scaup have declined as clam populations have dropped due to poor river conditions, including increased sedimentation and toxins in the sediment (like ammonia). The U.S. Fish and Wildlife Service's 2006 Waterfowl Breeding Population and Habitat Survey found that Scaup numbers were at a record low in 2006 — 37 percent below the average for the previous 50 years. Additional habitat for migrating birds and other wildlife has been lost due to drainage and conversion of wetland acres for agricultural use.

## LOCKING UP THE RIVER

Rather than focusing on the Upper Mississippi's degraded habitats — and proven methods to restore those areas — the Army Corps of Engineers has focused its energies primarily on increasing river barge capacity.

The barge industry complained about delays at 600-foot locks on one section of the Upper Mississippi River-Illinois Waterway. So the Corps of Engineers put together a \$2.2 billion plan to expand river navigation, including \$1.9 billion to add new 1,200-foot locks at seven locations.

Although delays do occur when multiple barges arrive at locks at the same time, the Nicollet Island Coalition maintains that trends in barge traffic — and the economics of the lock construction project — do not support expanding the river system's lock capacity. The coalition is a group of nonprofit organizations dedicated to restoring the Upper Mississippi River. Coalition members — including the Izaak Walton League, Institute for Agriculture and Trade Policy, National Wildlife Federation, Prairie Rivers Network, and Sierra Club — have spent considerable time and effort fighting the Corps' navigation expansion plan.

In a February 2010 report entitled, "Big Price-Little Benefit: Proposed Locks on the Upper Mississippi and Illinois Rivers Are Not Economically Viable," the Nicollet Island Coalition concluded that the Corp's new locks

cannot be justified — a conclusion shared by the Department of the Army (which oversees the Corps of Engineers) and an independent agency that reviewed the Corps' plans. In fact, the Army Inspector General found in early 2000 that the Corps manipulated its economic justification for the new locks. And the National Research Council — which functions under the auspices of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine — said the Corps' plan "contains flaws serious enough to limit its credibility and value within the policy making process."

The Izaak Walton League and the Nicollet Island Coalition oppose building larger locks on the Upper Mississippi for the following reasons:

**Barge Traffic Is Decreasing:** Barge traffic on the Upper Mississippi has been dropping for more than 20 years, including steep declines in the past decade. At the seven locations where the Corps wants to build bigger locks, the number of barges that went through in 2008 was nearly half the number processed in 1999. In fact, a 2009 report by Dr. Donald Sweeney found that these seven locks were in use about 60 percent of the time in 1991 but only 35 percent of the time by 2008. With locks sitting idle most of the time they are open for business, there is no reason to spend \$1.9 billion to construct bigger locks.

**Small Steps Can Make Big Improvements:** New locks would not eliminate congestion from multiple barges arriving at the same time. In 2001, the National Research Council found that lock delays could be reduced if the Corps implemented small-scale measures (such as mooring cells that tows can tie up to while waiting to enter a lock) and non-structural improvements (like an appointment system). The Corps was even directed by the Assistant Secretary of the Army for Civil Works in 2006 to implement such improvements "to determine their impact on total project benefits." To date, the Corps has not initiated any small-scale or non-structural improvements to reduce barge delays.

**Properly Maintained Locks Get New Lease on Life:** Another argument for new locks is the claim that the river's lock and dam infrastructure is crumbling. However, all UMR-IWW locks have benefited from rehabilitation projects that added another 50 years of lock usability — including the seven locks where the Corps proposed new 1,200-foot locks. Although Congress funded rehabilitation of the locks, funding for lock-and-dam operations and maintenance — including personnel, utilities, and minor repairs — has been flat, and

## UMR-IWW LOCKS AND DAMS



The 29 dams and associated locks on the Upper Mississippi River-Illinois Waterway (UMR-IWW).

the Nicollet Island Coalition reports that the backlog for these costs may be near \$1 billion today. Congress should focus on funding the maintenance needs of the existing system, not constructing new locks and increasing the system's maintenance obligations.

**New Locks Are a Bad Investment:** Not only is there no demonstrated need for the new locks, there is an economic argument against them. Barges may not be the most cost-effective method of shipping freight to the Gulf of Mexico. In addition, the costs of the new locks would greatly outweigh any benefits, and the industry fund that's supposed to cover half the construction costs lacks the revenue for the projects.

- **Barge Travel Is Not More Fuel Efficient:** The barge industry claims that inland waterways barge traffic is more fuel efficient than other methods of transportation. However, the Mississippi River's twists and turns increase how far a barge has to travel. Several national studies have found that barges must travel 30 percent farther than a train to reach the same destination. In addition, "unit trains" — a train carrying cars with just one type of commodity that travels non-stop to its final destination — are much more efficient than regular trains,





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according to the Nicollet Island Coalition. The “Big Price-Little Benefit” report finds that barges and freight trains have virtually the same rates of fuel efficiency and that both are far less efficient than unit grain trains.

- **New Locks a Bad Deal for Taxpayers:** Congress approves public infrastructure projects based on estimates of cost and public benefit. More than just dollars and cents, benefits include societal needs such as protecting the environment. Based on the past 20 years of barge traffic trends, the Nicollet Island Coalition estimates that the Corps’ proposed new locks would give taxpayers a negative return of \$7 billion over 50 years — clearly not a wise investment.
- **Bad Deal for Taxpayers Could Get Worse:** The Inland Waterways Trust Fund (IWTF) was established in 1978 to pay half the cost of inland waterways construction projects. IWTF receives its funding entirely from the barge industry through a tax on transportation fuel. The Corps of Engineers reports that IWTF had essentially no available funds as of 2009 (and a \$17 billion backlog in funding

obligations). But that doesn’t mean new lock projects will stay on hold until the barge industry can pay its fair share. Congress eliminated the barge industry’s funding obligation on two lock and dam rehabilitation projects last year. If Congress does the same thing for the Corps’ lock expansions, American taxpayers could end up paying the entire \$1.9 billion for new lock construction (and then some to cover cost overruns).

## THE TIES THAT BIND

Congress approved the Corps’ Navigation and Ecosystem Sustainability Program (NESP) in 2007, in which the Corps tied its navigation expansion plan to a habitat restoration program. Neither program can now proceed independent of the other.

The Corps has wasted 15 years and \$50 million in taxpayer dollars trying to justify building seven new locks on the Upper Mississippi. Given the realities of river barge traffic, Congress needs to close the door on the Corps’ unnecessary lock construction and redirect funds toward much-needed river restoration projects.

Without Congressional action, restoration will remain underfunded, simple fixes to improve navigation on the river will be underutilized, and taxpayer dollars will be unnecessarily squandered.

## ECO-SOLUTIONS

Even the Corps of Engineers acknowledges that its lock-and-dam system “significantly altered” the Upper Mississippi River and that the river “is currently degraded and expected to get worse.”

Once a river has been so “significantly altered,” the only way to restore fish and wildlife habitat is further human intervention. The most promising approach to date is the Environmental Management Program (EMP), which brings together federal and state expertise to develop and test river restoration projects within the Upper Mississippi River System. EMP receives about \$20 million each year from Congress and is managed by the U.S. Fish and Wildlife Service, the Army Corps of Engineers, and the state governments of Illinois, Iowa, Minnesota, Missouri, and Wisconsin.

Although EMP has completed successful restoration projects on the UMR-IWW, it does not have the funds to fully restore the river. Saving the Upper Mississippi will require an expanded restoration program — and the dollars needed to meet program goals.

The Upper Mississippi River Conservation Committee (UMRCC), an organization of 200 UMR wildlife resource professionals, estimated in 2002 that an investment of \$900 million per year for more than 50 years may be needed to restore the Upper Mississippi River System floodplain to “a more sustainable ecosystem.” The estimate is based on restoration steps highlighted in the Corps’ “Upper Mississippi River System Habitat Needs Assessment” (published in 2000), a UMRCC report, and Environmental Pool Plans initiated by state and federal river managers. Steps in UMRCC’s restoration estimate include:

- **Island Restoration:** Stabilizing islands and planting trees, prairie, or a mix of habitats on those islands.
- **Backwater Restoration:** Dredging to increase the depth of aquatic areas within the floodplain.
- **Forest, Prairie, and Marsh Restoration:** Converting floodplain lands currently in agriculture — acquired only from willing sellers — back to forest, prairie, or marsh.
- **Fish Habitat Structures:** Restoring habitats for spawning, overwintering, and juvenile fish.
- **Shoreline Stabilization:** Using a variety of methods to stabilize 1,420 miles of shoreline, including structures to manage sand and sediment, no-wake zones, mooring cells, and rock protection.
- **Wing Dam/Dike Field Modifications:** Eliminating or modifying 500 river structures (including wing dams and dikes that are no longer functional or no longer needed) to improve aquatic habitats.
- **Levee Modifications:** Modifying levees to allow for “nutrient exchange” and fish movement to areas that are suitable for spawning and rearing fish.

Additional steps include monitoring the effectiveness of these actions and making adjustments to future restoration plans as needed. UMRCC’s estimate accounts for existing land management activities

such as maintaining refuges along the Upper Mississippi River System and managing forest and prairie resources.

Restoration of the Upper Mississippi River System will benefit more than fish and wildlife — it will benefit local economies too. Waterfowl hunting, fishing, boating, and other types of outdoor recreation can be improved with better river conditions. Tens of millions of Americans enjoy these activities every year, and the money they spend supports everything from major manufacturing industries to small businesses in communities across the country — and generates billions of dollars in state and local tax revenue.

## RECOMMENDATIONS TO CONGRESS

The Upper Mississippi is not the gateway to the world that it once was. Barge traffic on the river has decreased in part because agricultural exports have dropped. According to a May 2004 report from the Congressional Research Service, “Robust growth in demand from food and industrial processing as well as from the renewable biofuels sector (particularly corn-based ethanol production) has helped to bolster growth in domestic use of corn and soybeans. For corn, domestic use as a share of production...has grown steadily through most of the 1990s, peaking at an 88 percent share in 2002–2003.” Corn and soybeans — the main agricultural crops along the UMR-IWW — are now being used at home rather than shipped abroad.

With a sharp decline in barge traffic and a desperate need for river restoration funds, the Nicollet Island Coalition recommends that Congress:

- **De-authorize the Navigation and Ecosystem Sustainability Program, canceling the Corps’ new lock construction projects.** The Water Resources Development Act Congress passed in 2007 authorized NESP, meaning it gave congressional approval for the program to proceed. However, NESP mandates that critical river restoration efforts — which benefit not only the environment but local economies as well — cannot proceed unless the new locks are built. With no evidence that the benefits of lock expansion will ever outweigh the costs to taxpayers, Congress should terminate NESP.
- **Increase funding for river restoration.** The Environmental Management Program receives just \$20 million per year in Congressional funding — far below the \$900 million per year the Upper Mississippi River Conservation Committee projects is needed to fully restore the river. Congress should prioritize river restoration in future funding discussions and authorize the Environmental Management Program to proceed with such restoration work.
- **Authorize and fund small-scale and non-structural measures to improve barge traffic immediately.** Even the Corps agrees that these measures will help relieve occasional barge delays on the UMR-IWW.

Although the Mississippi River today looks nothing like the free-flowing river immortalized by Mark Twain, we can ensure the river will be a vital resource for future generations by acting now to restore one of America’s greatest rivers.

—Dawn Mayhew Merritt is the League’s Communications Director.