

A satellite photograph of the Mississippi River delta region. The river is a prominent dark blue-green line winding through a vast, arid, tan-colored landscape. The river's path is highly irregular and meandering, especially in the lower half of the image. The top of the image shows the river's mouth where it meets a larger body of water, likely the Gulf of Mexico, with a dark blue hue. The surrounding land is mostly flat and devoid of significant vegetation, with some lighter-colored patches that could be salt flats or sand dunes.

ISSUE ELEVEN : SUMMER 2018
OPEN RIVERS :
RETHINKING WATER, PLACE & COMMUNITY

PARADOXES OF WATER

<http://openrivers.umn.edu>

An interdisciplinary online journal rethinking the Mississippi
from multiple perspectives within and beyond the academy.

ISSN 2471-190X

The cover image is of The Nile River, July 19 2004. To the right of the Nile is the Red Sea, with the finger of the Gulf of Suez on the left, and the Gulf of Aqaba on the right. In the upper right corner of the image are Israel and Palestine, left, and Jordan, right. Below Jordan is the northwestern corner of Saudi Arabia. Jacques Descloitres, MODIS Rapid Response Team, NASA/GSFC.

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Open Rivers: Rethinking Water, Place & Community is produced by the [University of Minnesota Libraries Publishing](https://www.libraries.umn.edu/) and the [University of Minnesota Institute for Advanced Study](https://www.umn.edu/ia/).

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ISSN 2471-190X

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PERSPECTIVES

AN ENDANGERED RIVER: THE MISSISSIPPI RIVER GORGE

By Olivia Dorothy

Restoring One River in the Land of 10,000 Lakes



*The fall colors along the Mississippi River are framed nicely by the Ford bridge.
This photograph was taken looking upstream of Lock and Dam 1 in Minneapolis, Minnesota.
USACE photograph by Sam Mathiowetz.*

Almost 500 river miles below its source at Lake Itasca, the Mississippi River tumbles over its only waterfall in downtown Minneapolis. Dubbed the Falls of Saint Anthony by explorer Father Louis Hennepin, the falls were formed by glacial action more than 10,000 years ago. The magnificent waterfall was once over 200 feet high and located in downtown St. Paul. Over the years, the falls migrated upstream to their present location in downtown Minneapolis. The migrating waterfall left an eight-mile trail of broken limestone in its wake, earning its Anishinaabe (Ojibwa) name *gichi-gakaabikaa*, or “great severed rock.”

Today, the aquatic Gorge ecosystem is drowned by navigation dams. But a recent action by Congress to close the head of navigation in

Minneapolis has instigated a U.S. Army Corps of Engineers (the Corps) protocol to review and determine the fate of federal infrastructure through this stretch of the river. Through this process, there is an opportunity to evaluate ecosystem restoration and dam removal options.

Removing the dams would revive critical habitat for several state and federal endangered species, including lake sturgeon, paddlefish, and eleven species of mussels. But before a jackhammer touches the dams, a litany of questions needs to be answered.



Lock and Dam 1 during the UWCA Partner Paddle, 2010. Image courtesy of Greg Lais.

The Problem: Loss of a Big River Rapid

The stretch of broken limestone below the falls is known as the Mississippi River Gorge for its narrow floodplain and steep valley, dropping over 100 feet in just eight miles. The gorge was once one of four big river rapids on the Upper Mississippi River, the others historically located in Rock Island, Illinois, Keokuk, Iowa, and St. Louis, Missouri. Of the four, only a remnant of the St. Louis “Chain of Rocks” rapids remains today. That rare piece of rapids in St. Louis is a critical spawning area for native fish and, likewise, biologists believe the Mississippi River Gorge was once a critical component of the river’s ecosystem and fishery.

Two dams are drowning the rapids today: Lock and Dam 1 and Lower St. Anthony Falls Lock and Dam. Lock and Dam 1 was originally constructed in 1917 just above the confluence of the Minnesota and Mississippi Rivers to facilitate navigation and began supplying power to the Ford Motor Company assembly plant in the 1920s. Ford closed the plant, and Brookfield Power Company has been generating electricity at the site since 2008. Lower St. Anthony Falls Lock and Dam was built just below the falls in the 1950s and 1960s by the Corps to support commercial barge traffic through the gorge and above the falls.



Traversing the Upper St. Anthony Falls Lock in 2010, with a view of the Stone Arch Bridge. The lock is now closed to traffic. Image courtesy of Greg Lais.

The Opportunity: Disposition of Corps Infrastructure

Removing dams is a commonly used approach to restore a river's natural form and function. Dam removal projects can range from simple projects that remove relic mill dams on small streams to complex and active hydropower dams that are over 100 feet tall. For the past 20 years, American Rivers, a leading river conservation organization, has helped lead a national effort to bring rivers back to life through dam removal.

Because Congress closed Upper St. Anthony Falls Lock, there is a window of opportunity to remove or modify the Lower St. Anthony Falls Lock and Dam and Lock and Dam 1 and restore the historic rapids habitat. Both dams are operated and maintained by the U.S. Army Corps of Engineers. Due to budget constraints, Congress has instructed the Corps to review all their infrastructure and make recommendations on divestments.



John Koepke, Samuel Gees, and Michael Keenan, Faculty of the Department of Landscape Architecture, University of Minnesota, and Retinoh, LLC, Urban Ecosystems LLC

Rendering of what restored rapids in the river may look like, showing the river at the Franklin Avenue Bridge. Image courtesy of American Rivers.

In response, the Corps has initiated disposition studies around the nation. A disposition study on the locks and dams of the Green and Barren Rivers in Kentucky has already led to the removal of one dam and potential removal of two more to

eliminate liabilities and restore river habitat. In Minneapolis, the Corps has initiated disposition studies on the Lower St. Anthony Falls Lock and Dam and Lock and Dam 1.

What is a disposition study?

Disposition studies are conducted by the Corps on infrastructure that may no longer be meeting its congressionally authorized purpose. The essence of the study is binary: should the Corps continue to operate and maintain the

infrastructure? Yes or no. If the answer is “no,” the Corps will initiate additional steps to release the infrastructure, usually by selling or giving the infrastructure to another entity.



The Mississippi River gorge. Image courtesy of Olivia Dorothy.

The Challenges

There are many issues that need to be examined before the dams can be removed. A feasibility study needs to be completed to investigate the engineering challenges and determine project costs. Included in the feasibility study would be site-specific reviews that are of interest to the community. Questions identified at an open house in July 2017 related to:

- Identifying other locations for competitive rowing activities;
- Replacing lost hydropower with another renewable energy source;

- Clarifying the environmental benefits of dam removal in the gorge;
- Developing plans to expand/improve recreational access;
- Exploring the needs of minority and low-income people in planning; and
- Identifying any infrastructure that might be vulnerable to changing river discharge.

Experts at local, state, and federal agencies and at American Rivers are starting to evaluate these and other critical questions to inform the community decision-making.

How to Get Involved

If you are interested in weighing in on this critical decision about the future of the Mississippi River in the Twin Cities, here are several opportunities.

Visit the American Rivers website to send a letter to the Corps about restoring the Gorge. Talk to your elected officials about what you want for the future of the Mississippi River Gorge. Talk to local agency officials about the future of the Gorge. Minnesota Department of Natural Resources and the National Park Service will

provide expert advice on the future of the Mississippi River Gorge. Let them know what you think.

The outcome of the disposition study will be a landmark moment for the future on the Mississippi River in Minneapolis. It is critical to ensure community engagement with the agencies that manage the river, because this decision will define the Mississippi River in the Twin Cities for generations to come.

Recommended Citation

Dorothy, Olivia. 2018. "An Endangered River: The Mississippi River Gorge." *Open Rivers: Rethinking Water, Place & Community*, no. 11. <http://editions.lib.umn.edu/openrivers/article/the-mississippi-river-gorge/>.

About the Author

Olivia Dorothy joined American Rivers in 2014, and works on reforming the management of the Mississippi River. She facilitates the Nicollet Island Coalition, a group of environmental, taxpayer, and conservation organizations focused on restoring a sustainable Upper Mississippi River. Prior working at American Rivers, Olivia worked on similar issues at the Izaak Walton League of America. Before entering the non-profit sector, Olivia worked in Illinois government as a rivers and water policy advisor. She has a Bachelor of Science in Natural Resources and Environmental Sciences and a Master of Art in Environmental Studies from the University of Illinois.