

Plastic Pollution in the Mississippi River – Regional Cooperation for a Transboundary Problem

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Figure 1 Barges transit the Mississippi River near St. Louis, MO in 2012. Photo courtesy of the USDA

The [Mississippi River watershed](#), the largest in the U.S. and fourth largest in the world, has shaped American history and culture. The Mississippi River basin covers about 40% of the continental U.S. and millions of Americans rely on the river and its vast network of tributaries for fresh water, agriculture, navigation, fisheries, and recreation. A wide diversity of complex, interconnected habitats in the basin – from tallgrass prairie to coastal marshes – support an abundance of migratory and year-round wildlife.

The Mississippi River drains into the Gulf of Mexico, nourishing the Gulf’s important fisheries. However, along with the freshwater and sediment that the river carries, enormous amounts of plastic pollution flow from communities along the Mississippi River and its tributaries into the Gulf. Draining rural and urban regions from St. Louis to Nashville to New Orleans, the Mississippi River Basin is home to about 90 million people--and mismanaged trash anywhere in the river basin can flow downstream into the Gulf, and ultimately into the ocean.

Though trash of any kind in the Mississippi River is a problem, plastic pollution is especially concerning because it persists in the environment for centuries, creating hazards for wildlife and humans. Animals often mistake plastic debris like bags, balloons, and straws for food, and choke or starve to death; they can also become [entangled](#) in fishing lines, six-pack rings, and many other types of plastic trash.

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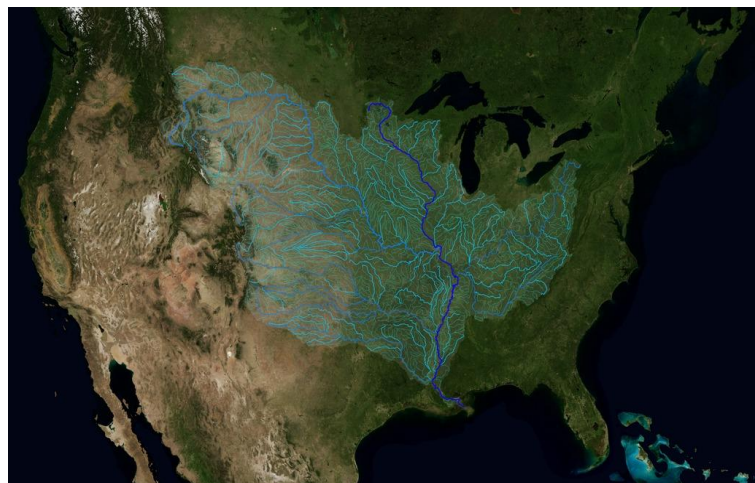


Figure 2. High resolution image of the Mississippi watershed courtesy of NASA’s Scientific Visualization Studio



Figure 3 The unaltered stomach contents of a dead albatross chick. Photo courtesy of the US Fish and Wildlife Service

Most plastic debris in the environment breaks down over time into *microplastics*, small plastic pieces less than 5mm in size. In a 2015 study, microplastic concentrations at the Louisiana coast were found to be among the [highest in the world](#). Also contributing to the high volume of microplastics found in the Mississippi River are tiny pre-production plastic pellets known as nurdles – the raw materials used to make plastic products. As they are packaged and transported from plastic production plants to factories in the U.S and abroad, [nurdles frequently spill](#) into the environment, where it becomes nearly impossible to clean them up. Though microplastics are hard to see, they create

serious hazards for the wide variety of organisms that consume them.

The waters of the Mississippi River carry plastic across municipal and state boundaries, meaning that downstream communities are impacted by the litter produced by upstream communities in addition to their own. The Mississippi River Cities and Towns Initiative (MRCTI) is taking a regional approach to tackling this transboundary problem. The [MRCTI](#) brings mayors from cities and towns along the Mississippi River mainstem together to address major concerns facing the region, including water quality, sustainable development, and disaster resilience and adaptation.

As Mayor-President Sharon Weston Broome of Baton Rouge, Louisiana puts it, “Plastic pollution in the Mississippi River is a quality of place issue.” In Baton Rouge and many other communities along the Mississippi, the riverbank is a place for recreation and an important tourist attraction. Keeping these public spaces litter-free and enjoyable for the people visiting, living, and working in the area is a large economic burden that is borne by local governments and their taxpayers.

Mayor Broome, who also serves as Co-Chair of the MRCTI, explains that the solution to the problem of plastic pollution is multi-faceted and much of the work is currently being done at the municipal level. Tackling the plastic pollution problem involves educating the public on proper trash disposal, designing and implementing stormwater management and solid waste management programs that keep litter from entering waterways, working with the private sector to reduce the use of disposable plastics, and improving recycling systems. “Our cities



Figure 4. A plastic bottle in a stream. Photo courtesy of US EPA

can't do it alone and so we must have collaboration," she says. Through the MRCTI, mayors share best practices for preventing plastic pollution at the local level, advocate for federal policies that will help reduce plastic pollution, and work with large corporations to reduce their plastic use. "There's an impact when we speak as one voice of mayors who are united around these issues," says Mayor Broome.

In 2018, the MRCTI collaborated with public and private sector actors to develop and implement strategies for [reducing plastic waste](#). These efforts generated greater awareness of the Mississippi River's plastic pollution problem, creating momentum for new projects. Last year, MRCTI teamed up with the United Nations Environment Programme (UNEP), the National Geographic Society, and the University of Georgia to launch The [Mississippi River Plastic Pollution Initiative](#). Despite the great ecological, cultural, and economic importance of the Mississippi River, there is a lack of comprehensive baseline data on the concentrations and major sources of plastic pollution in the river. This creates challenges for those working to design and implement plastic pollution reduction activities. Through the Mississippi River Plastic Pollution Initiative, data on plastic pollution will be gathered at various sites along the river and used to develop a plastic pollution map. This map will inform plastic pollution reduction efforts at the community, municipal, state, and regional levels. The data will also identify baseline levels of plastic pollution in the river so that the effectiveness of future efforts to reduce plastic pollution can be evaluated.

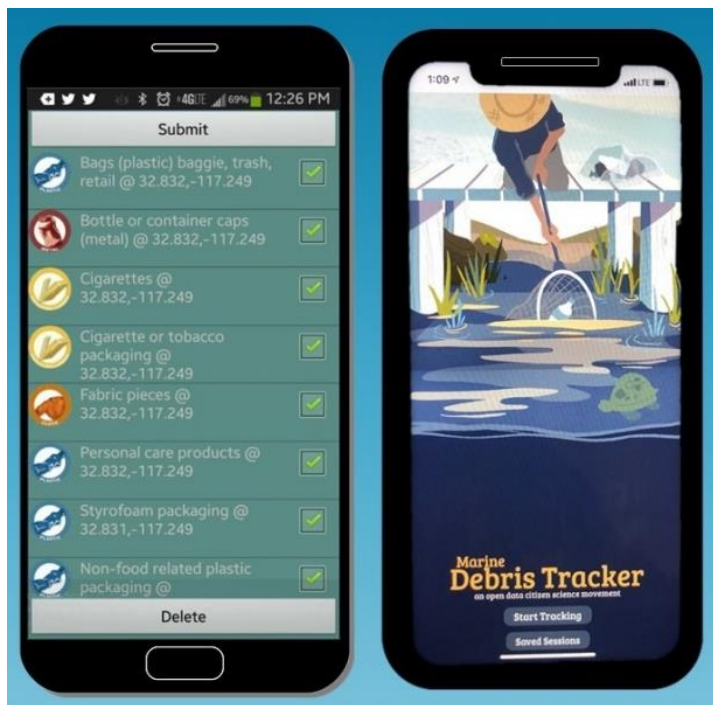


Figure 5 The NOAA Marine Debris Tracker is an app that can be used to collect trash data. Photo courtesy of NOAA

In order to collect as much data as possible, this initiative will engage citizen scientists to collect and record data in an app called the [Marine Debris Tracker](#), which was developed by the U.S. National Oceanic and Atmospheric Administration (NOAA) and the University of Georgia. "Through engaging citizen scientists, our goal is to generate as rich a picture as possible of the type, concentration, (and) brand of plastic litter along the river," said Laura Fuller, who leads communications for UNEP in North America. "Citizen science is a way to crowdsource knowledge and engage local participants to be part of data collection, which generates far more information in less time than if researchers collected data on their own." Data gathered from along the Mississippi River will be available to scientists, educators, policymakers,

and the public through an open-data platform. The plastic pollution map will display real-time data and will be accessible at www.unep.org/Mississippi.

Education is another component of the Mississippi River Plastic Pollution Initiative. MRCTI, the University of Georgia, and National Geographic Society have developed a series of educational tools that schools, universities, and other local institutions can use to improve the public's understanding of the Mississippi River's plastic pollution problem.

The Mississippi River Plastic Pollution Initiative partners hope that the project will not only produce valuable research and impacts in the region, but also serve as a model for other river basins in the U.S. and abroad to collect plastic pollution data at the regional scale to inform decision-making.

If you want to join the Mississippi River Plastic Pollution Initiative and collect data in your community, read the project's [Citizen Science Field Guide](#) to get started. Even if you live outside the Mississippi River region, we can all help keep plastic trash out of waterways by reducing the amount of plastic we use and by disposing of waste properly. Visit [the EPA Trash Free Waters website](#) to learn more about how you can help reduce plastic pollution.



Figure 6. Natchez, Mississippi. Photo courtesy of Pixabay

This article is the fourth in a series produced by EPA's Trash-Free Waters program.