

Mississippi River Basin / Gulf of Mexico Nutrient Runoff Network Info Bulletin

Sharing information and making connections from the headwaters to the gulf

July 1, 2024

Welcome!

This bulletin is designed as a way to share information with those interested in nutrient runoff issues and impacts. ***We hope you find this a valuable resource and encourage you to be a part of the exchange!*** You can share resources or information for inclusion in future bulletins, or join the distribution list, by sending an email to noaa.centralregion@noaa.gov.

Spotlight: Upper Mississippi River Basin Association (UMRBA)



[The Upper Mississippi River Basin Association \(UMRBA\)](#) is a forum for interstate water resource planning and management on the Upper Mississippi River and represents its member states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Through UMRBA, the states along the Upper Mississippi River work with federal partners and stakeholders to advance multi-use management of the river and to facilitate cooperative and coordinated planning and management of the Basin's water and land resources.

Since 1981, UMRBA has represented the five states' common interests across a wide range of issues. Initially, the Association's major focus was working with Congress and federal agencies to implement key recommendations from the Upper Mississippi River Basin Commission's 1981 Master Plan for the Upper Mississippi River System (UMRS), including the construction of a second lock at L&D 26 and establishment of an ecosystem restoration and monitoring program. Over the years, commercial navigation and ecosystem management have remained central to UMRBA's work, while other issues such as water quality have grown in importance. *(Image: The Upper Mississippi River Basin Association represents member states of Illinois, Minnesota, Missouri, and Wisconsin. UMRBA.org)*

UMRBA and Water Quality

Protecting and improving water quality is critical for the Upper Mississippi River Basin. People depend on this water for drinking, and for their businesses, industries, and farms. Clean water is also essential to ecosystems in the Basin, which in turn support tourism and recreation. Furthermore, nutrient runoff and other pollutants impact ecosystems and communities all down the Mississippi River and into the Gulf of Mexico.

As an interstate, regional collaborative, the Upper Mississippi River Basin Association (UMRBA) assists the states in implementing the Clean Water Act and nutrient reduction strategies. UMRBA works towards building a layered and interwoven approach to water quality protection that involves local, state, regional, and federal responsibilities in order to provide a coordinated and comprehensive water quality strategy in alignment with watershed goals. Ensuring available clean water resources requires restoring the ecosystem, addressing aging infrastructure, reducing nutrient loading, controlling invasive species, and planning for potential spills. It also requires monitoring and research to help watershed managers and policy-makers understand the system, measure progress, and choose the most effective future actions.

[Click here to learn more about how UMRBA works to protect and improve water quality in the Upper Mississippi River Basin.](#)

[2023 Multi-Benefit Conservation Practice Workshop](#)

Last October, the Upper Mississippi River Basin Association (UMRBA) hosted a “Multi-Benefit Conservation Practice Workshop” in St. Paul, MN to discuss ways of increasing implementation of multi-benefit conservation practices. Attendees represented a variety of organizations and sectors: government (local, state, federal), private, agricultural, industry, universities, and nonprofits.

A multi-benefit conservation practice is one that provides more than one beneficial outcome in any combination of agronomic, ecological, social, and financial. A wetland is a good example of this type of conservation practice, as it has potential to provide water quality improvement, flood mitigation, carbon sequestration, wildlife habitat, and more.

A preceding UMRBA-hosted workshop, held in St. Louis, MO in November 2022, explored how organizations can accelerate the implementation of multi-benefit conservation practices that address nutrient reduction in the Upper Mississippi River Basin. This series of workshops was funded through a cooperative agreement with the U.S. Environmental Protection Agency’s Office of Water. UMRBA offers the following conclusions reflecting on the two-part workshop series on multi-benefit conservation practices:

1. The acceleration of adopting multi-benefit conservation practices is important in the Upper Mississippi River basin to ensure farmland is healthy for continued production of crops and to protect and build resilience in those lands.
2. UMRBA’s two-part workshop series focused on how to increase the adoption of multi-benefit conservation practices. The two workshops drew a wide range of people working in agriculture-related areas from a variety of educational backgrounds and organizations/agencies. The cross collaboration of public and private sector groups and the structure of the workshops allowed for thoughtful and innovative idea sharing.
3. The first workshop was designed to balance information sharing and breakout group discussions around three topic areas: research, communication, and financial. The conversations highlighted the importance of multiple disciplines and multiple layers of organizations and agencies being involved to reduce nutrient loading in the Upper Mississippi River basin.
4. The [systems map utilized in the second workshop](#) helped workshop participants understand how to map and identify leverage points. The systems map can be applied to various levels of an organization’s or agency’s work.
5. Many presenters in the second workshop emphasized the power of peer-to-peer communication, education, and leadership as leverage points for increasing multi-benefit conservation practice adoption by commodity and specialty crop producers. This was especially true for women, tribal, and BIPOC farmers. The power of peer-to-peer communications reinforces the insight that messages and messengers geared to specific and different audiences are keys to unlocking and leveraging positive change.
6. UMRBA will continue to work on behalf of its five member states to increase the collaboration and sharing of resources supporting nutrient reduction strategies. The UMRBA will be organizing and coordinating the Upper Mississippi River Sub-basin Committee to the Hypoxia Task Force, and this committee will focus on interstate collaboration with respect to the basin states’ nutrient management strategies.

The workshop summaries and materials can be [found here](#).

Nutrient Runoff News

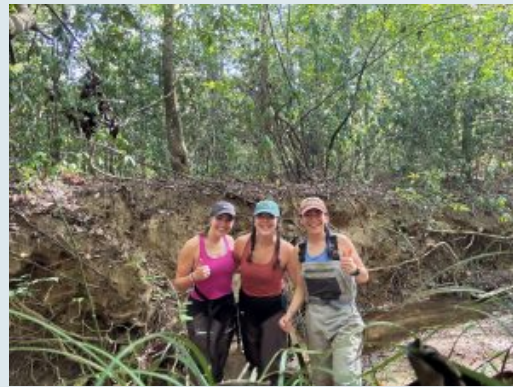
[Researchers to Study Climate Change Impacts on Dead Zone](#)

The effects of the Gulf of Mexico Dead Zone are well documented—marine life struggles to survive in the low-oxygen waters created by excess nutrients streaming into the Gulf of Mexico from the Mississippi river. Now, a changing climate and warming ocean waters may compound the effects of this hypoxic zone, and [a team of LSU researchers is trying to determine what the impacts might be](#). Their project, funded by a \$1.5 million grant from NOAA, aims to study the biological vulnerability to hypoxia from climate warming and eutrophication in the northern Gulf of Mexico.

The study will occur in two parts. First, the researchers will use computer models to project ocean warming and future water quality conditions in the area, and measure how marine species respond to those projected changes in the lab. They will use those data to paint a detailed picture of the conditions created by hypoxic stressors and warming waters. Second, they will predict the impact of those stressors on important species of fishes that live in the Gulf – species like the Atlantic croaker, the southern flounder and the red snapper. The final goal of the project is to develop an ecophysical framework for important species in the Northern gulf, and apply it to temperature dependent habitat shifts and body size shrink for those species over the next few decades.

\$2.5 M Awarded for Headwater Stream Research

As one of [14 Department of Energy funded projects](#), \$2.5 million was awarded to a collaborative team studying the impacts of changing headwater stream networks on surface water quality, habitats, and ecosystem response. [Led by the University of New Mexico](#), the group of researchers are concentrating on five very different headwater stream networks spread across the U.S. continental precipitation gradient. Along with the University of New Mexico, other universities involved include: the University of Alabama, the University of Arkansas, the University of New Hampshire, the University of Nevada, Reno and the University of Oklahoma. They are also partnering with the Watershed Dynamics and Evolution Science Focus Area at Oak Ridge National Lab.



Researchers are planning to study five headwater watersheds, which include:

- Upper Santa Fe River Watershed in New Mexico | Drains into the Santa Fe River
- Dog Creek Watershed in Nevada | Drains into the Truckee River
- South Sandy Creek in Alabama | Drains into the Black Warrior River
- Richland Creek in Arkansas | Drains into the White River Basin
- Lamprey River in New Hampshire | Drains into the Great Bay Estuary

The two-year project will happen in three stages. With the help from a group of researchers at The University of Oklahoma, the first stage will include hydrologic modeling – where researchers will simulate processes and help predict what entire watershed stream networks are doing based on observations of waterflow, precipitation and other factors. The second stage includes understanding the spatial structure of each watershed in terms of how it influences water quality and quantity. The third and final part of the project will look at how all this changes throughout time in response to changing patterns of precipitation and drought.

[Click here to read more details from the University of Alabama perspective](#) (Image: University of Alabama professor Dr. Ariel Shogren (right) and her students at the South Sandy Creek watershed. Alabama Water Institute)

Grassed Waterways - Reducing Erosion, Protecting Water Quality

Grassed waterways, graded channels which are seeded with grass or other suitable vegetation, can significantly reduce gully erosion and inhibit nutrient runoff. This type of conservation practice is known as a "treatment practice," which minimizes the movement of soil and nutrients off a farm field; treatment practices are often used in conjunction with "upland practices," aimed at keeping the movement of soil and nutrients within a farm field to a minimum.

Discovery Farms, a program of the University of Wisconsin-Madison Division of Extension, operates a edge-of-field monitoring study which recently [provided an excellent illustration](#) of the need for both upland practices **and** a treatment practice such as grassed waterways. At this farm in Kewaunee County, Wisconsin, corn silage was grown utilizing reduced tillage as well as cover crops, both upland practices. However, even with the implementation of these conservation practices, runoff sampling from the field found high amounts of soil and nutrients. It turns out that the omission of a treatment practice was allowing rill and gully erosion to occur where flow concentrated off the field. To reduce the erosion, a grassed waterway was installed. This new treatment practice reduced the soil leaving the field by 99%, highlighting the necessity of using both upland as well as treatment conservation practices.

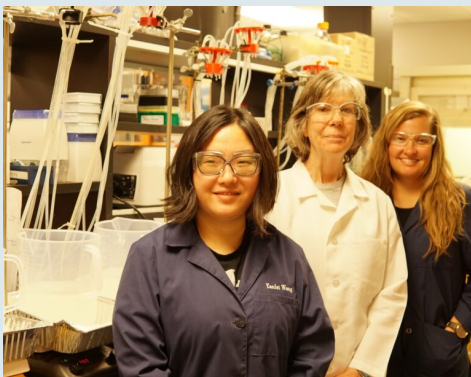


The grassed waterway at a Discovery Farms location in Wisconsin reduces erosion and helps protect downstream water quality. This study-site illustrates that combinations of conservation practices may be needed for positive change. (University of Wisconsin-Madison Division of Extension)

[Potential Budget Cuts for Gulf Monitoring System](#)

A Gulf of Mexico early warning system which employs undersea gliders and sailing drones to collect data on ocean temperature, dissolved oxygen, salinity, and other critical metrics [may be at risk of significant budget cuts](#). The data collected by the [Gulf of Mexico Coastal Ocean Observing System](#) (GCOOS) are used to understand and predict ocean acidification and harmful algal blooms, improve hurricane modeling and forecasting, and help communities along the Gulf make informed decisions about coastal and open-ocean activities. However, proposals in Congress would cut the funding for the parent organization of GCOOS, the U.S. Integrated Ocean Observing System, from \$42.5 million to \$10 million.

[A Novel Approach for Managing Harmful Algal Blooms](#)



NOAA's National Centers for Coastal Ocean Science (NCCOS) and its partners have been [exploring controlled-release techniques](#) for managing harmful algal blooms (HABs). Controlled-release methods allow a product to be delivered predictably and at consistent rates, and are commonly used for pharmaceuticals, but applying this to environmental challenges is relatively new. The team's study investigated if alginate, a non-toxic substance extracted from brown algae, could be used as a controlled-release product to manage HABs. The team also explored how factors and characteristics of the alginate could be fine-tuned to achieve the best controlled-release rate of product. In addition to HAB management, this approach could be helpful in addressing other challenges throughout environmental and healthcare fields. (Image: Scientists, (from left) Dr. Yanfei Wang (UD), Dr. Kathy Coyne (UD), and Dr. Kaytee Pokrzywinski (NCCOS) gather at the University of Delaware (UD) Hugh R. Sharp Campus, Lewes, DE to test the methodology of the alginate beads in in situ mesocosms in the Broadkill River, Lewes, DE. The scaled up prototype bead production equipment can be seen in the background, including customized, 3D printed tubing spacer. National Centers for Coastal Ocean Science)

[Study Finds Clay Treatments for HABs Unlikely to Harm Blue Crabs](#)

Harmful algal blooms (HABs) made up of *Karenia brevis*, often called red tides, are a near-annual occurrence in parts of the Gulf of Mexico. These HABs kill marine life and negatively impact local economies. One option for mitigating them is through the use of clay treatments. These treatments involve spraying a slurry of clay particles and seawater; as the clay particles sink, they combine with *Karenia brevis* cells, a process that can kill and bury them on the bottom. This HAB mitigation option is relatively inexpensive, can be scaled over large areas, and studies in China and Korea found low environmental impacts. However, until now there has been little known about the impact to bottom-dwelling animals such as crabs.

[A recent study looked into the effect of clay treatments on one of Florida's most commercially valuable animals - blue crabs.](#) The findings were positive and suggest that using clay to control red tides will likely not impact blue crab populations. In the past, the state of Florida has focused primarily on policies aimed at reducing nutrient runoff that fuels these blooms, rather than trying to suppress them as they occur. This results of this study indicate that clay treatments should be a viable, safe option for managers to use. Researchers plan to continue investigating impacts of clay treatments on additional species.



Clay being sprayed onto water in a Florida marina to aggregate and sink harmful algae. (Woods Hole Oceanographic Institution)

Outlooks and Forecasts

[NOAA Predicts Above-Average 'Dead Zone' in Gulf of Mexico](#)

The "dead zone," an area of low oxygen that can kill fish and other marine life in the Gulf of Mexico, is primarily driven by nutrient runoff delivered by the Mississippi River. When these nutrients reach the Gulf, they cause excessive algal growth. When these algae die and decompose, oxygen is depleted from the water column resulting in dangerously low levels for animals. [The National Oceanic and Atmospheric Administration \(NOAA\) is predicting an above-average summer dead zone](#) covering approximately 5,827 square miles (the 37-year average is 5,205 square miles).

This forecast was created using a suite of models developed jointly by NOAA and its partners - teams of researchers at the University of Michigan, Louisiana State University, William & Mary's Virginia Institute of Marine Science, North Carolina State University, and Dalhousie University; the results of these models are integrated into an "ensemble" model forecast. The U.S. Geological Survey (USGS) provides Mississippi and Atchafalaya River discharges and nutrient loading data for the month of May, which are used by the forecast models. In May 2024, discharge was about 5% above the long-term average between 1980 and 2023, and the nitrate and phosphorus loads were about 7% below and 22% the long-term averages, respectively.

[Above-Normal Hurricane Season Predicted](#)

NOAA National Weather Service forecasters at the Climate Prediction Center [predict above-normal hurricane activity in the Atlantic basin this year](#), with a forecast range of 17 to 25 named storms. Of those, 8 to 13 are forecast to become hurricanes, including 4 to 7 major hurricanes (category 3 or higher).

The upcoming Atlantic hurricane season is expected to have above-normal activity due to a confluence of factors, including near-record warm ocean temperatures in the Atlantic Ocean, development of La Nina conditions in the Pacific, reduced Atlantic trade winds and less wind shear, all of which tend to favor tropical storm formation.

Funding Opportunities

[NOAA Restore Funding - Long Term Trends in the Gulf of Mexico Ecosystem](#) - Submission deadline August 22, 2024

[Inflation Reduction Act Community Change Grants Program](#) - Submission deadline November 21, 2024

Jobs, Fellowships, and Graduate Assistantships

[Soil Health/Nutrient Management Specialist](#) - Wabash, MN; application deadline July 15, 2024

[Environmental Planner](#) - Marion, IL; application deadline July 15, 2024

[Individual Gifts Officer \(Friends of the Mississippi River\)](#) - St. Paul, MN; application deadline July 17, 2024

[Water Quality Lab Manager/Chemist](#) - Corpus Christi, TX; application deadline July 18, 2024

[EPA Research Opportunity - Microbial Communities and Biogeochemical Cycling](#) - San Juan, PR; application deadline July 19, 2024

[Natural Resources Analyst \(Nonpoint Source Program, Water Quality\)](#) - Multiple locations, WY; application deadline July 31, 2024

[Stewardship & Education Program Director \(Friends of the Mississippi River\)](#) - St. Paul, MN; application deadline July 31, 2024

[PhD and Master's Assistantships in Aquatic Ecology and Harmful Algal Blooms](#) - Auburn, AL; application deadline August 1, 2024

[EPA Fellowship in Spatial Analysis for StreamCat Watershed and National Nutrient Data](#) - Corvallis, OR; application deadline August 2, 2024

[EPA Fellowship in Nature based ecosystem services in Ag and Floodplain Systems](#) - Ada, OK; application deadline August 30, 2024

[Gulf Ecosystem Initiative Postdoc](#) - Santa Barbara, CA; application deadline September 30, 2024

[Research Assistant in Water Quality - Auburn University](#) - Auburn, AL; application deadline not listed

[NOAA Student Opportunities Database](#) - For students of any level (grade school through graduate school, even recent graduates), this database includes one-day events, summer internships, multi-year fellowships, and more!

Upcoming Meetings and Events

[National Marine Educators Association Conference](#) - July 28 - August 1, 2024 in Boston, MA

[North Central Agriculture and Climate Conference](#) - July 31 - August 1, 2024 in Peoria, IL

[Midwest Climate Adaptation Science Center Annual Gathering](#) - August 13 - 15, 2024; East Lansing, MI

[Midwest Drought Early Warning System Partners Meeting](#) - August 20 - 22, 2024; Indianapolis, IN

[Alabama Water Resources Conference](#) - September 4 - 6, 2024 at Perdido Beach Resort, AL

[Coastal Resilience and Adaptation Conference](#) - September 18 - 19, 2024 ; Virtual

[12th U.S. Symposium on Harmful Algae](#) - October 27 - November 1, 2024 in Portland, ME

[2024 Bays and Bayous Symposium](#) - November 19 - 20, 2024 in Biloxi, MS

[Gulf of Mexico Alliance All-Hands Meeting](#) - May 5 - 8, 2025 in Biloxi, MS

Nutrient Runoff Quiz!

Are you an expert on nutrient runoff, harmful algal blooms, and hypoxia?
Test your knowledge with our trivia quiz!

[CLICK HERE : Nutrient Runoff Quiz - July 2024](#)

2024 Leaderboard

1st - Jeff Meyers (NOAA) - 14 points total
2nd - Kelly Drinnen (NOAA) - 13 points total
3rd (T) - Brian Astifan (NOAA) - 12 points total
3rd (T) - Whitney King (EPA) - 12 points total



Runoff from a timber-harvested plot enters a headwater stream in north central Louisiana (Abram DaSilva).

To join the distribution list and/or include information in the next bulletin, email



NOAA Regional Collaboration: Improving NOAA's service to the Nation

NOAA | Central Region Collaboration Team | Kansas City, MO 64153 US

[Unsubscribe](#) | [Update Profile](#) | [Constant Contact Data Notice](#)



Try email marketing for free today!