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

Sharing information and making connections from the headwaters to the gulf

September 3, 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 Miss. River National Wildlife and Fish Refuge

Stretching 261 river miles from Wabasha, MN to Rock Island, IL, the **Upper Mississippi River National Wildlife and Fish Refuge** is the longest, contiguous river refuge in the continental United States, protecting more than 240,000 acres of Mississippi River floodplain. On average, the refuge hosts more than 3.7 million visits each year for hunting, fishing, wildlife observation, and other recreation. It is also a Wetland of International Importance, with the Ramsar Convention on Wetlands declaring it to be potentially the most important corridor of fish and wildlife habitat remaining in the central United States. The refuge is at the core of the Mississippi Flyway, through which 40% of North America's waterfowl migrate.

The Upper Mississippi River at Lansing, Iowa is part of the Upper Mississippi River National Wildlife and Fish Refuge. This relatively undisturbed riverine habitat consists of flowing main and side channels, large shallow to moderately deep backwater marshes, and floodplain forests and shrub-dominated communities. (Gretchen Newberry/USFWS)

100-Years as a Haven for Fish, Wildlife, and People

The Upper Mississippi River National Wildlife and Fish Refuge **celebrated its 100-year anniversary** on June 7th, 2024. In 1923, Chicago fisherman and Izaak Walton League co-founder Will Dilg began a campaign to stop planned development along a stretch of the upper Mississippi River. Promotors of the development were pushing to drain floodplain wetlands along the more than 300 mile stretch between Lake Pepin, MN and Rock Island, IL, and Dilg wanted to enlist American conservationists to help save this ecologically-important stretch of river. In July of that year, he wrote an impassioned plea for readers of the *Izaak Walton League Monthly* to send letters to the President of the United States, William Harding. In describing the unique benefits of the ecosystem and the risks posed by the planned development, Dilg put it this way:

> *Nowhere on this earth are there such natural feeding grounds for ducks, brant and geese. Here also are found every species of our four-footed little animals, such as mink, muskrat, raccoon, skunk, squirrel, swamp rabbit, etc. And last but not least, every kind of song birds by the countless thousands. Veritably, these river lands offer you and your boy and posterity the greatest sport to be found on this planet.*

This is true as things are now - even without decent law enforcement, but with the proper policing this region would be ten thousand times more fertile in fish and game than it is today. But it's going to GO - it's going to be destroyed - these river lands are going to be drained all the way from Lake Pepin, Minn., to Rock Island, Ill. And when these river bottoms are once drained THEY ARE GONE FOREVER.

The efforts of conservation advocates such as Dilg were ultimately successful: on June 7th, 1924, the 68th Congress passed public law 268 establishing the Upper Mississippi River National Wildlife and Fish Refuge and preserving this unique ecosystem as a haven for migratory birds, fish, wildlife, and people.

Helping Protect the Gulf of Mexico

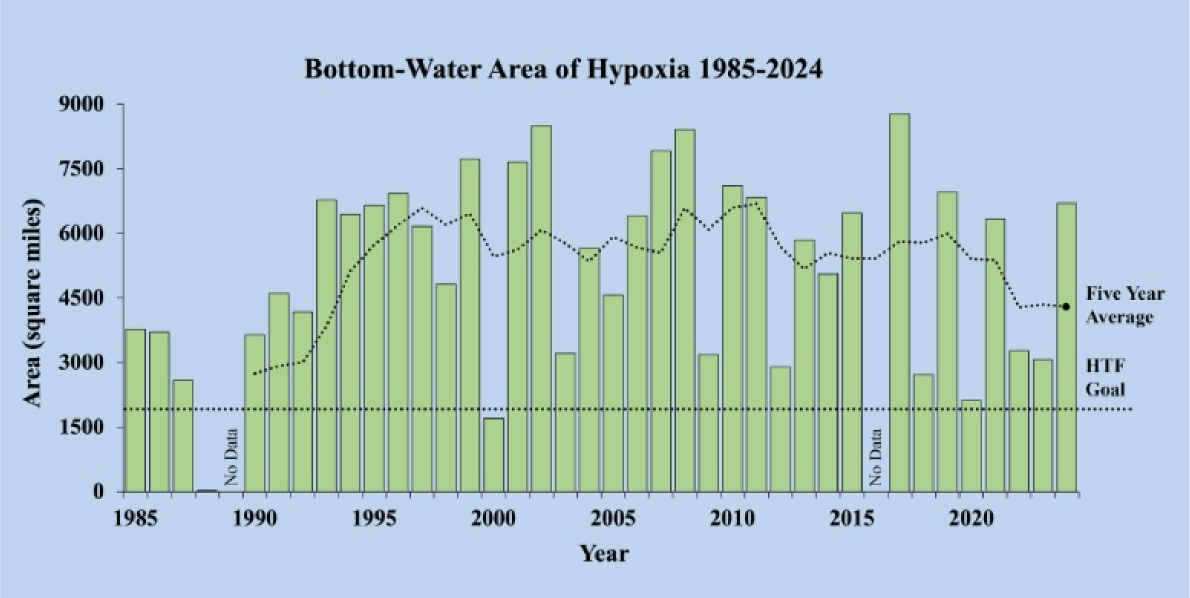
Covering 189,189 square miles and including 800 miles of river, the Upper Mississippi River Basin comprises 15% of the total drainage area for this major river. However, between 1985 and 1988, it was **responsible for 31% of the total nitrogen** delivered from the Mississippi River to the Gulf of Mexico. And according to the Upper Mississippi River Basin Association, the amount of **water running off into this system is increasing**; between 1940 and 2019, U.S. Geological Survey data show increased maximum, mean, and minimum discharges, likely due to climate and land use changes. This increased runoff makes it even more important for natural systems to process these nutrients before they make their way downstream to the Gulf of Mexico, and the more than 240,000 acres of floodplain wetlands, backwater marshes, and wooded islands in the Upper Mississippi River National Wildlife and Fish Refuge do exactly that. *(Image: Purple coneflowers bloom on a floodplain in the Upper Mississippi River National Wildlife and Fish Refuge. Stewards of the Upper Mississippi River Refuge)*

Nutrient Runoff News

Larger than Average Gulf of Mexico 'Dead Zone'

Scientists announced the size of this year's Gulf of Mexico dead zone, an area of low to no oxygen capable of killing fish and marine life, **is approximately 6,705 square miles**. The five-year average size is 4,298 square miles. This annual measurement is a key metric informing the efforts of the Mississippi River/Gulf of Mexico Hypoxia Task Force, a state/federal partnership which has set the long-term goal of reducing the five year average size to less than 1,900 square miles by 2035. In June, NOAA predicted an above-average sized dead zone of 5,827 square miles, and this measured size of 6,705 square miles falls within the uncertainty range for the ensemble forecast, which demonstrates accuracy of the underlying models.

In the future, autonomous surface vehicles may be used to map hypoxia in the Gulf of Mexico; this year, several were deployed in coordination with the measurement survey, and the data they have collected will be compared with ship-based measurements.



Long-term measured size of the hypoxic zone (green bars) measured during the ship surveys since 1985, including the target goal established by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and the 5-year average measured size (black dashed lines). (NOAA/LUMCON/LSU)

'Know Your Water' - Program Helping Test Private Wells in Kansas

In Kansas, more than 151,000 people get their drinking water from private groundwater wells, which are not regulated by the Federal Safe Drinking Water Act. This means that these wells are not subject to the same water quality monitoring as public water, and state residents depending on these wells may not know much about how clean the water actually is, apart from how it tastes. **A new Kansas State University partnership** aims to help well owners find out if their wells are contaminated by things such as improperly disposed chemicals, animal waste, or pesticides. This spring, the team involved in this program provided Kansans with direct mailings with instructions for scheduling private well testing, and in some cases, offered the testing free of charge. They also offered residents in specific areas an irrigation system audit, which can help them use water more efficiently. As part of the outreach, the Know Your Water team updated water quality publications and have made them available to the public; more than 30,000 copies have been sent to residents in certain counties, and all 105 K-State Research and Extension offices received printed copies of the publications to help spread the word in these communities.

NOAA's NCCOS Turns 25

The National Centers for Coastal and Ocean Science **celebrates its 25th anniversary** of supporting NOAA's scientific mission and coastal mandates. Founded in 1999, work at NCCOS capitalizes on NOAA's research, monitoring, assessment, and technical assistance capabilities to address environmental problems, build partnerships among coastal programs, and help provide the science for coastal management throughout the nation. Roughly 127 million people live in coastal communities, and these communities generate $10 trillion in economic activity while employing 55 million people. Research conducted and funded by NCCOS and its partners is dedicated to serving these coastal communities and their businesses.

Edge-of-Field Grant Recipients Share their Stories

Good Idea Mini-Grants, a program encouraging the implementation of edge-of-field conservations practices on farming operations in the Mississippi River Basin, **awarded seven teams** up to $8,000 to implement practices aimed at reducing soil erosion and nutrient runoff from farm fields. "What's most exciting about these projects is how diverse the operations and edge-of-field practices are. The differences here are a strength, demonstrating creative approaches to enhance land stewardship and improve water quality in the Mississippi River Basin," said Beth Baker, an associate extension professor at Mississippi State University Extension Service who is leading the mini-grant program.

In addition to implementing the conservation practices on their farms, the teams will produce a video and/or podcast about their projects to help others learn about edge-of-field practices. These will be included on **One Good Idea**, an collection of materials featuring farmers sharing their experiences with conservation practices. The teams will install their edge-of-field practices this summer and fall, and their videos and podcasts will be shared via One Good Idea in winter 2025. *(Image: Mini-grant recipient Darren Yanke of Echo-Y Farmers. Sand County Foundation)*

Farm to Trouble - New Series Focuses on 'Dead Zone' Causes

Focusing on efforts to curb nutrient runoff fueling the Gulf of Mexico's dead zone, **Farm to Trouble** is a new series highlighting farming practices leading to the Gulf's hypoxic zone and the decades of work trying to address the problem. In June, Farm to Trouble released the following stories:

- **Part 1**: Farm to Trouble: As conservation lags, so does progress in slashing Gulf's 'dead zone'
- **Part 2**: At the mouth of the Mississippi, Louisiana bears the burden of upstream runoff. Why doesn't it push for solutions?
- **Part 3**: Not just a Gulf problem: Mississippi River farm runoff pollutes upstream waters
- **Part 4**: Could the Mississippi River benefit from Chesapeake Bay's strategy to improve water quality?
- **Dig deeper**: "We should have a sense of urgency": Drainage tile drives nutrient pollution

Farm to Trouble comes from the Mississippi River Basin Ag and Water Desk, and independent journalism collaborative based at the University of Missouri in partnership with Report for America. *(Images: We are just one year away from a 2025 deadline to reduce the farm runoff washing down the Mississippi River into the Gulf of Mexico by 20%. Darrell Hoemann, Investigate Midwest; ROSCOSMOS/NASA)*

Record Year for Conservation Practices on Indiana Farms

According to the Indiana Conservation Partnership (ICP), a record number of conservation practices were completed across the state for the second year in a row. More than 50,000 practices aimed at maintaining soil health were installed in 2023, more than the 47,000 completed in 2022 (which was also a record). The ICP reported actions taken by these landowners over the past year helped prevent more than 1.6 million tons of sediment, over 3.6 million pounds of nitrogen, and more than 1.8 million pounds of phosphorus from entering Indiana waterways. Some of the most common conservation practices in Indiana are cover crops, nutrient management, residue and tillage management, conservation cover, early successional habitat development/management, and grassed waterways.

EPA Webinar Series: HABs, Hypoxia, and Nutrients

Have you heard? The Environmental Protection Agency (EPA) produces a**free webinar series** focused on communicating the latest, most cutting-edge research on nutrient runoff and its impacts on harmful algal blooms (HABs) and hypoxia. Topics include regional priorities, regulatory updates, and EPA research related to monitoring and forecasting, prevention, control, and response. These webinars are usually held bimonthly from 2 to 3 p.m. ET on the last Wednesday of the month. Coming up next in the series:

- 9/25: ***Coastal Dissolved Oxygen Dynamics and a Brief Introduction to the Hypoxia Task Force***
- 11/20: ***HABs Toxicity and Health Effects of Anatoxin-A***

Highlights from the Hypoxia Task Force

The Mississippi River/Gulf of Mexico Hypoxia Task Force was established in 1997 to understand the causes and effects of eutrophication in the Gulf of Mexico and to coordinate efforts aimed at reducing the size, severity, and duration of the hypoxic zone in the Gulf. To highlight work being done by the Hypoxia Task Force and provide a snapshot of recent state activities, federal agency activities, publications, and resources, a newsletter is produced four times each year. Check out **the July 2024 issue** for some great updates on nutrient reduction work being done in Kentucky, Indiana, and Illinois, along with some positive funding news regarding the Bipartisan Infrastructure Law!

Blog Series - Addressing the Underlying Causes of Water Quality Degradation

Understanding Ag, a regenerative agriculture consulting company, recently put out a series of articles focused on how farming practices can protect water quality. The most recent edition of their *Addressing the*

Underlying Causes of Water Quality Degradation series, "**Busting myths on the road to water quality**," describes nitrogen sourcing options and how plants acquire nutrients in a healthy soil. You can find this article and others - all focused on soil health, nutrient runoff, and their intersection with agriculture - at Understanding Ag's **From Our Experts** collection.

Illinois Tackles Nutrient Pollution

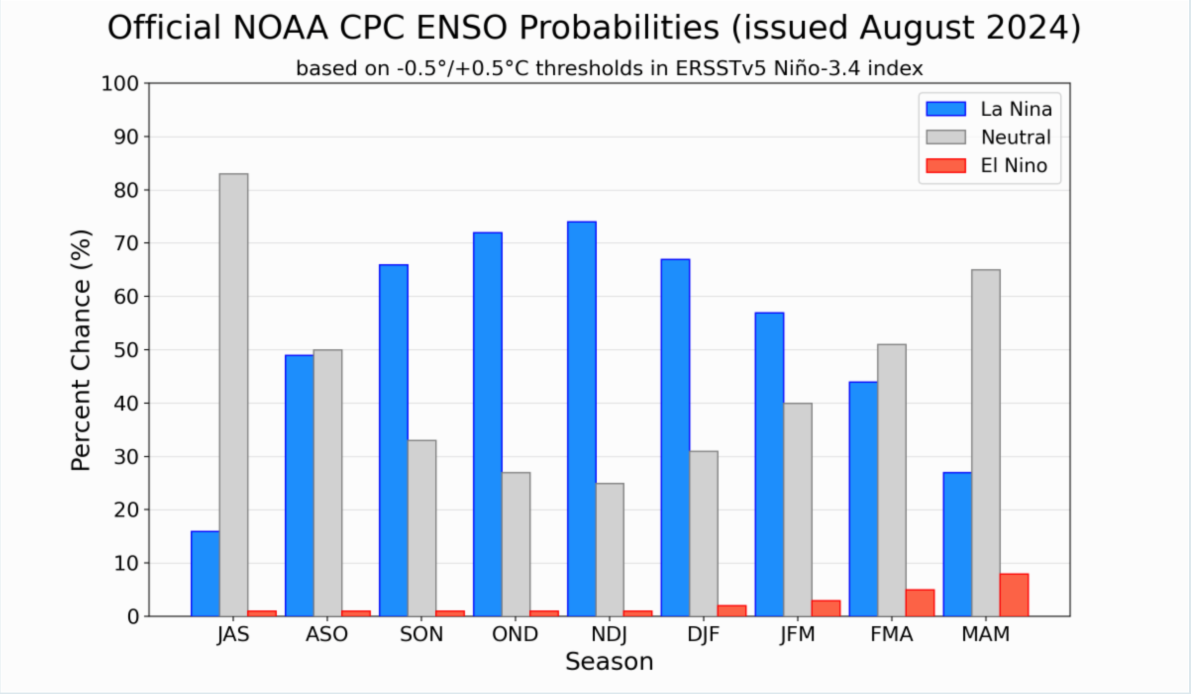
Illinois is a leading state when it comes to agriculture and urban development, characteristics bringing both benefits and challenges. While these land uses are economically-critical to Illinois, both can be sources of nutrient runoff, negatively affecting downstream water quality. **A recent blog** from the North Central Region Water Network delves into the ways Illinois is approaching water quality enhancement.

The Illinois Nutrient Loss Reduction Strategy is a statewide collaborative effort working to reduce the amount of nutrients, particularly nitrogen and phosphorus, entering Illinois waterways. (University of Illinois)

Outlooks and Forecasts

La Niña Still Expected Later This Year

NOAA is still predicting the development of La Niña this fall and winter, as explained in **this early-August ENSO blog**.



Out of the three climate possibilities—La Niña, El Niño, and neutral—forecasts say that neutral conditions are the most likely for the July-September season (tall gray bar above the JAS label, over 80 percent chance). By the September-November (SON) season, La Niña has the highest chance of occurring (blue bar, above 65 percent chance). (NOAA Climate Prediction Center)

Drought in the Mississippi River Basin

In 2022 and 2023, significant drought in summer and early fall impacted large portions of the Mississippi River Basin. This low water negatively impacted river navigation, limited the shipping of agricultural goods, and allowed salt water to make its way upriver from the Gulf of Mexico; in both 2022 and 2023, this saltwater intrusion necessitated the construction of an underwater sill designed to protect drinking water in communities along the lower Mississippi River. Prior to 2022, construction of this sill had only occurred in 1988, 1999, and 2012. **Now the sill is being constructed for a third straight year**, as water levels once again drop **amidst drought in the Mississippi River Basin**.

The drought outlook for September 2024 calls for improving conditions along the lower Mississippi River, but for drought to persist or develop in much of the Ohio River Basin (which normally contributes around 50% of the flow reaching the bottom of the Mississippi River). Likewise, drought conditions are expected to develop or persist in the Missouri, Arkansas, and White River Basins (which, on average, contribute 10%, 5%, and 3% of the Mississippi River's total flow).

Funding Opportunities

Implementation Grants for Wastewater Resilience (Minnesota Pollution Control Agency) - Application deadline September 26, 2024

NCR-SARE Research and Education Grant - Pre-proposal deadline October 10, 2024

Inflation Reduction Act Community Change Grants Program - Submission deadline November 21, 2024

Jobs, Fellowships, and Graduate Assistantships

Senior Soil Health and Biochar Scientist - Washington, D.C.; open until filled

USDA-ARS Fellowship in Plant Nitrogen and Photosynthesis Gene Networks - Urbana, IL; application deadline September 27, 2024

Chemical Tracer Scientist - Seattle, WA; application deadline September 30, 2024

Gulf Ecosystem Initiative Postdoc - Santa Barbara, CA; application deadline September 30, 2024

Aquatic Ecology Intern - Golden Gate Recreation Area, CA; application deadline October 8, 2024

M.S. Graduate Research Assistantship Aquatic-Fisheries Community Ecology - Nacogdoches, TX; application deadline October 31, 2024

Graduate Research Assistant - Gainesville, FL; application deadline November 15, 2024

Ph.D. and M.S. GRAs: Aquatic Ecology and HABs - Auburn, AL; application deadline June 30, 2025

Still Searching? More Opportunities Found at:

Texas A&M Job Board (keyword: "Water Quality") - NUMEROUS opportunities! Note: Modify keywords and tailor search to your own interests and experience.

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

Alabama Water Resources Conference - September 4 - 6, 2024; Perdido Beach Resort, AL

Conservation Finance Ag Educator Training - September 16 - 17; Arlington, WI

Coastal Resilience and Adaptation Conference - September 18 - 19, 2024 ; Virtual

Climate, Water, and Equity Workshop - October 9 - 11, 2024; Minneapolis, MN

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

Drought and Aquatic Ecosystems in the Southeast Workshop - January 7 - 9, 2025 in Raleigh, NC

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 - September 2024

2024 Leaderboard

1st - Jeff Meyers (NOAA) - 20 points total
2nd - Brian Astifan (NOAA) - 17 points total
3rd - Kelly Drinnen (NOAA) - 13 points total

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

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