Confluence

Current Newsletter: Volume 1, Issue 1
September 2014
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Welcome to Confluence

Confluence is an electronic newsletter co-produced by the University of Arkansas, University of Wisconsin, and a consortium of twelve Land- Grant Universities in states along the Ohio and Mississippi Rivers. The goal of Confluence is to bring you research-based, unbiased information on agricultural practices and efforts to reduce nutrient losses from agriculture to the Gulf of Mexico.

We will also work with the Mississippi River Gulf of Mexico Watershed Nutrient Task Force (Hypoxia Task Force) and other partners to provide the latest information on the status of hypoxia, nutrient reductions, conservation programs and other efforts and activities related to addressing nutrient reduction to the Gulf. Production of the newsletter is funded through the generous support of USDA's Natural Resources Conservation Service.

Confluence is most often defined as the merging of rivers, but its definition has often been broadened to mean the act or process of merging or converging. In our case, the name Confluence was chosen to symbolize the converging of institutions and organizations around protecting natural resources in the smallest northern tributary streams all the way to the Gulf of Mexico, while continuing to provide research-based support to the safest, most productive and efficient agricultural system in the world.

Land-Grant administrators responsible for the Agricultural Experiment Stations and Extension programs in the twelve participating states have already entered into a Non-funded Cooperative Agreement with the Hypoxia Task Force to facilitate sharing of research, outreach, and management expertise. In addition, the twelve Land-Grant Universities from the respective states are in the process of formalizing

a geographically-targeted and issue-focused workgroup of agricultural researchers and extension specialists to help address nutrient losses from agriculture lands.

In Confluence, you will see updates from the Hypoxia Task Force, land-grant universities, USDA, state agencies, local conservation districts and others as we strive to keep you informed of all nutrient-related issues from the twelve-state region along the Ohio and Mississippi River corridors.

Confluence will be delivered regularly via email using Constant Contact. If you think this information would be useful to other professionals you work with, please forward it on. They can sign-up using the easy instructions provided below.

And because this newsletter is for you, please consider submitting articles as a way of sharing success stories, outreach programs, or research findings that will move conservation forward in the Mississippi and Ohio River corridors. We also invite you to submit questions, comments and any announcements of conservation-related events. Submissions can be made to either Mike Daniels or Rebecca Power. Through our confluence, we can make a difference in our efforts to feed the world while ensuring plentiful natural resources for future generations.

Sincerely, your Co-Editors

Mike Daniels, Ph.D.
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Get to Know the Hypoxia Task Force

It's great to have the Hypoxia Task Force be a part of this important newsletter. The Hypoxia Task Force (http://water.epa.gov/type/watersheds/named/msbasin/index.cfm) consists of 12 states and 5 federal agencies has been making great strides over the past few years in developing approaches to reduce nitrogen and phosphorous pollution in the Mississippi River Basin and eventually the Gulf of Mexico.

Let me start with a little history. The Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, a.k.a. The Hypoxia Task Force, was established in 1997 to understand the causes and effects of the hypoxia zone in the Gulf of Mexico; support nutrient pollution reduction activities from all activities related to nitrogen and phosphorus pollution in the Mississippi River that drain to the Gulf of Mexico; and, recommend activities to reduce the size, severity, and duration of the hypoxia zone in the Gulf. The so called 'dead zone' in the Gulf of Mexico is about the size of the state of Connecticut and caused mostly by pollution coming from upstream in the Mississippi River Basin.

The focus of the Task Force over the past few years has been implementing the 2008 *Gulf Hypoxia Action Plan 2008 for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico and Improving Water Quality in the Mississippi River Basin,* especially the primary action of developing individual state nutrient strategies. The top priority action in the 2008 Plan called for individual state nutrient strategies.

I am happy to report that the 12 Task Force states are working on individual strategies to reduce both in-state and downstream nutrient pollution that include many innovative, voluntary opportunities for agriculture. Those strategies include the identification of high priority sub-watersheds in each state where we believe we can get the 'most bang for our buck'. The federal members are committed to supporting those state strategies. Over the past few years, the federal agencies have been able to provide new programs, funding, and technical tools to both lead federal efforts and support state efforts to reduce nitrogen and phosphorus pollution to the Gulf of Mexico. States like Iowa are also using their state strategies to rally additional funding and just as important, stakeholder buy-in. We also realize that federal support and state funding alone won't help us reach our ultimate goal.

The Task Force believes that we have developed a strong framework on our path toward reducing nutrient pollution in state rivers and streams and also, reducing the size of the Gulf hypoxic zone. However, we need to the help of many others to achieve our goals. We would like to build as many partnerships as we can with both individuals and other organizations to advance our collective efforts. If you haven't already been involved, I urge you to get involved now. The links to the state strategies are on our Hypoxia task Force website listed above.

Our initial effort in expanding the work of the Task Force with other partners was just announced last May, an MOA with the Land Grant Universities from each of our 12 Task Force States. This innovative approach not only includes Universities from as far North as Minnesota with those as far South as Mississippi, but also brings together both the research and extension parts of the universities. We in the Task Force are counting on our new land grant partners to help us identify and solve local and basin wide issues and help accelerate the implementation of the state nutrient strategies.

In future articles we'll highlight in more detail the work of the states and federal agencies and talk more about expanding our partnerships.

Nancy Stoner is the Acting EPA Assistant Administrator for Water and has served as the federal co-chair of the Hypoxia Task Force for the last 3 years.

--- *Nancy Stoner*

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Gulf of Mexico Hypoxia

What is Hypoxia?

Hypoxia, in the simplest of definitions, is a deficiency of oxygen. The Northern Gulf of Mexico is plagued by hypoxia where dissolved oxygen concentrations in the water column have decreased to the point of no longer sustaining aquatic life during summer months. Excessive nutrient loading via the Mississippi River and its tributaries to the Gulf accelerates eutrophication, depleting the water of available oxygen.

Eutrophication is the process in which a water body accumulates high concentrations of nutrients, especially nitrates and phosphates, which promote excessive algae growth. The excessive algae die and decompose. The decomposition of the algae depletes the water of available oxygen, and thus kills other aquatic organisms. Eutrophication is a natural process, though a very slow process, and the introduction of excessive nutrients in the water body greatly speeds the process.

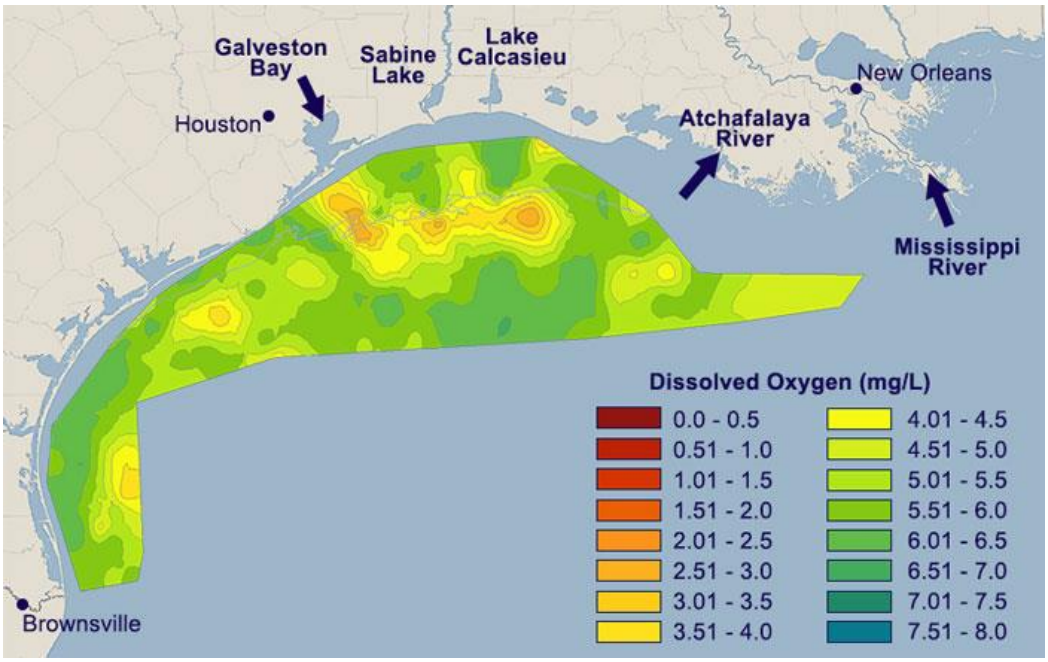

Image sourced from NOAA Gulf Hypoxia Watch

Where Do Excess Nutrients Originate?

The exact origin and location of nutrient delivery to the Gulf is largely unknown and difficult to define and track. However, large-scale water quality models applied across the entire Mississippi River basin, predict that excessive nutrients predominantly originate from non-point source run-off from agricultural, industrial, and municipal landscape sources. These modeling results suggest that the most notable source is from the increased use of nitrogen and phosphorus on agricultural land. It is thought that these fertilizers run-off from their application sites into the Mississippi River and its tributaries, making their way to the Northern Gulf of Mexico, accelerating algae growth, eutrophication, and ultimately leading to seasonal hypoxia.

What is Being Done to Address Hypoxia?

The Mississippi River/Gulf of Mexico Watershed Nutrient Task Force was established in 1997, and chartered in 1998. Members of the Task Force include representatives from Federal and State Agencies. The goals of the Task Force are to understand the causes and effects of eutrophication in the Gulf of Mexico and coordinate activities to remediate effects of hypoxia. Activities include coordinating and supporting nutrient management activities from all sources, restoring habitats to trap and assimilate nutrients, and supporting other hypoxia related activities in the Mississippi River and Gulf of Mexico watersheds.

The Task Force's first Action Plan was released in 2001, outlining a strategy to reduce Gulf hypoxia and calling for a progress assessment of its stated goals. The 2013 reassessment by the Hypoxia Task Force shows progress. Over the previous five years the Task Force has been targeting funds where they deemed the most needed, increasing agricultural conservation practices, developing state nutrient reduction strategies, and improving science and monitoring of water quality in the Mississippi River Basin. The report makes recommendations to hasten nutrient reduction undertakings and determine means to quantify progress in pollution reduction at a variety of scales, i.e. from small streams to the mouth of the Mississippi River.

"Achieving significant water quality improvements in water bodies as large as the Mississippi River and Gulf of Mexico takes time, and the increasing impacts of climate change such as more frequent extreme weather events pose additional challenges. The progress we've made across the board during the past five years provides an excellent foundation and we will work to accelerate our progress over the next five years," said Nancy Stoner, acting Assistant Administrator for Water for the U.S. Environmental Protection Agency and co-chair of the Task Force.

The Task Force's report finds that states are making headway with developing and implementing their respective nutrient reduction strategies. Final drafts of nutrient reduction strategies for all twelve states involved (Arkansas, Illinois, Indiana, Iowa, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Ohio, Tennessee, and Wisconsin) are expected to be completed by 2014.

The report shows there is abundant support for conservation assistance. The Mississippi River Basin Healthy Watersheds Initiative (MRBI) and similar Federal conservation assistance programs have provided significant aid to the Mississippi Basin. By the end of fiscal year 2013 the MRBI had provided over $341 million in aid for conservation practices, across 123 projects and 640 watersheds.

According to the Task Force's report, science and monitoring is continuing to advance. Throughout the Mississippi River Basin a network of long-term water quality monitors have been established. The monitors provide a means to determine a basin-wide assessment of nutrient loadings, allowing for precise targeting for nutrient and pollution reduction efforts.

The Task Force intends to continue its efforts in advancing scientific and technical assistance in the Mississippi River Basin, furthering research to enhance target conservation practices on the ground. The Task Force will further economic analyses of conservation practices spotlighting those practices that the

most economic and environmental benefits. Support for regulatory activities reducing nutrient run-off will continue. Finally, the Task Force will continue offering financial and technical assistance through innovation and leveraging, and expand market-based approaches.

The 2013 Gulf Hypoxia Assessment

Each year since 1985, The Louisiana Universities Marine Consortium (LUMCON) cruises the Gulf collecting water quality samples to spatially determine the extent of the Hypoxia zone. In 2013,

The hypoxic zone in the Gulf of Mexico (See image below) was 15,120 square kilometers (5,800 square miles), approximately double the size it was in 2012. Summer drought conditions throughout the Mississippi River Basin in 2012 were responsible for greatly reduced nutrient outputs into the Gulf. Find the full report here: Reassessment 2013 Assessing Progress Made Since 2008.

2014 Update

As of August 1, 2014, the hypoxic zone was measured 13,080 square kilometers (5,052 square miles). For the full press release for 2014, visit: August 4, 2014 Press Release. A full report will be released at a future date.

For more information on previous Action Plans, The Mississippi River Gulf of Mexico Watershed Nutrient Task Force, Hypoxia, and Nutrient Reduction Strategies visit: http://water.epa.gov/type/watersheds/named/msbasin/index.cfm

--- *Lee Riley*

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Regional Conservation Partnership Program

As part of the 2014 Farm Bill enacted earlier this year, NRCS is offering a new voluntary conservation program known as the Regional Conservation Partnership Program (RCPP). According to NRCS the RCPP was developed to promote coordination between NRCS and its fellow conservation partners to assist producers and landowners with conservation efforts.

The RCPP combines the authority of previous conservation programs: the Agricultural Water Enhancement Program, the Chesapeake Bay Watershed Program, the Cooperative Conservation Partnership Initiative and the Great Lakes Basin Program and provides assistance within the rules of EQIP, CSP, ACEP and HFRP; and in certain areas the Watershed Operations and Flood Prevention Program.

Through program contracts, easement agreements, and partnership agreements, NRCS is able to provide conservation assistance to producers and landowners. NRCS considers eligible conservation

partners to include agricultural or silvicultural producer associations, farmer cooperatives or other groups of producers, state or local governments, American Indian tribes, municipal water treatment entities, water and irrigation districts, conservation-driven nongovernmental organizations and institutions of higher education.

To receive a funded RCPP project, conservation partners must submit proposals through to a competitive process. However, RCPP is not a grant program; all funds targeted through RCPP will require significant contributions from the involved partners. RCPP funding will be awarded after a two-phase application process that includes: (1) a preproposal application; and (2) a full proposal application if the prepropasal is selected for full proposal.

During its first year the RCPP has received nearly 600 pre-proposals for RCPP conservation projects. According to NRCS the total amount of funding requested was more than 6 times what is actually available. Approximately $2.8 billion was requested but only $394 million is available for the 2014/15 fiscal year. Proposals were received from every state and critical conservation area.

NRCS reviewed the proposals and invited 230 of the original 600 to submit full proposals based on how their pre-proposals met the following criteria:

- Address resource concerns and measuring outcomes;
- Deliver high percentages of applied conservation to address conservation priorities or local, state, regional, or national conservation initiatives;
- Leverage significant non-federal financial and technical resources;
- Coordinate with other local, state, regional, or national efforts;
- Be innovative in conservation methods and delivery; and
- Assist producers in meeting or avoiding the need for a natural resource regulatory requirement.

If you are an eligible partner interested in applying consult the announcement for program funding. Upon approval of a partnership proposal, NRCS and the partner will enter into a partnership agreement through to coordinate assistance to producers in the project area.

--- *Adapted from NRCS by Lee Riley*

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Mississippi River Basin Healthy Watersheds Initiative

The Mississippi River Basin Healthy Watershed Initiative (MRBI) is a 13 state conservation initiative with NRCS and partners. The MRBI's goals are to improve the health of the Mississippi River Basin, including water quality and wildlife habitat. Through the MRBI the NRCS and its partners are helping producers in selected watersheds in the Mississippi River Basin with the voluntary implementation of conservation practices to manage nutrient run-off, improve wildlife habitat, restore wetlands, and maintain agricultural productivity. By the end of fiscal year 2013 the MRBI had provided over $341 million in aid for conservation practices, across 123 projects and 640 watersheds.

The Mississippi River is North America's largest river, flowing over 2,300 miles through America's heartland to the Gulf of Mexico. The Mississippi River is the primary watercourse of the 2nd largest watershed in the world. The watershed not only provides drinking water, food, industry, and recreation for millions of people, it also hosts a globally significant migratory flyway and home for over 325 bird species. More than 50 cities and 18 million people rely on the Mississippi River for their daily water supply. The Mississippi River is the main stem of a network of inland navigable waterways 12,350 miles in length.

NRCS has identified the Mississippi River Basin as a top priority due to water quality concerns, primarily related to the effects of nutrient loading on the health of local water bodies and, eventually, the Gulf of Mexico.

The 13-state Initiative builds on the cooperative work of NRCS and its conservation partners in the basin, and offers agricultural producers in priority watersheds the opportunity for voluntary technical and financial assistance.

The participating States are Arkansas, Kentucky, Illinois, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Missouri, Ohio, South Dakota, Tennessee and Wisconsin.

MRBI is implemented by NRCS through the Cooperative Conservation Partnership Initiative (CCPI): Environmental Quality Incentives Program (EQIP), Conservation Innovation Grants (CIG), Wildlife Habitat Incentive Program (WHIP), Conservation Stewardship Program (CSP), the Wetlands Reserve Enhancement Program (WREP), and other conservation programs. The MRBI's producers may also be eligible to receive financial and technical assistance to voluntarily install edge-of-field monitoring for water quality systems in selected watersheds. This monitoring will help NRCS assess environmental outcomes of this work.

Through MBRI, NRCS and its partners use a "conservation systems approach" to help producers avoid, control and trap nutrients and sediment to address water quality concerns. This is accomplished by optimizing nitrogen and phosphorus use efficiency in agricultural fields, minimizing nutrient and water run-off and improving soil health.

MRBI uses key conservation practices, such as nutrient management, conservation crop rotation, cover crops, and residue and tillage management, to address critical water quality concerns of the region.

These practices will reduce the impact of nutrient loading on the health of local water bodies and, eventually, the Gulf of Mexico. Producers also benefit a variety of wildlife species in the Mississippi River Basin by restoring and managing wetlands and upland habitats.

NRCS is building a foundation of partners from non-profit and private organizations, local, state, and federal governments and individuals across the Nation. These partnerships augment funding sources, increase return on investment, or provide boots-on-the-ground support. Thanks to the MRBI NRCS and its partners are working cooperatively with agricultural producers, partner organizations and state and local agencies to improve water quality and the quality of life for the tens of millions of people who live in and rely on the Mississippi River Basin.

--- *Adapted from NRCS*

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Hypoxia Task Force Tours Arkansas Farms

The Mississippi River Gulf of Mexico Watershed Nutrient Task Force, often referred to as the "*Hypoxia Task Force*", is an organization of federal and state agencies co-chaired by EPA that are collectively addressing hypoxia in the Gulf of Mexico. During their annual spring meeting held in Little Rock in May 2014, several Task Force members attended a field tour sponsored by the Arkansas Conservation Partnership that showcased conservation efforts on farms near Stuttgart, Arkansas in Arkansas County. Stops included the Terry Dabbs Discovery Farm where edge-of-field monitoring of runoff is documenting the effect of rice, corn and soybean production on water quality on a real, working farm. At the Five Oaks Lodge and wildlife management farm owned and operated by George Dunklin, current National President of Ducks Unlimited, participants were able to see innovative conservation practices to promote water fowl and other wildlife habitat.

Arkansas County has been designated as Critical Groundwater Area where groundwater levels are declining due irrigation withdrawals that exceed groundwater recharge. Tour participants visited the David Feilke and the Lane Oliver farms where they got to see firsthand how the USDA-NRCS' Mississippi Healthy River Basin (MRBI) are helping farmers construct surface reservoirs and other water conservation practices.

Terry Dabbs gives Ann Mills, USDA Deputy Under Secretary for Natural Resources and Environment, and Nancy Stoner, Environmental Protection Agency Acting Assistant Administrator for Water (right), a tour of his farm. (NRCS photo by Reginald L. Jackson)

Some notable attendees included Nancy Stoner, EPA Acting Administrator for Water, and Ann Mills, the Deputy Under Secretary for Natural Resources and Environment for USDA who wrote about the tour on her blog at http://blogs.usda.gov/2014/06/09/conservation-work-in-arkansas-makes-positive-impact-downstream/. Farm tours such as these can be very effective in helping farmers connect with those also trying to protect the Gulf. Ann summed up it very nicely in her blog by stating:

"*The farmers who we met the previous day provided great examples of how good agricultural stewardship can have a dramatic impact on clean water in addition to helping Arkansas' farms prosper. They made a strong case that the farmers in the Arkansas Delta are part of the solution.*"

Communicating and working together to find common ground is a key component to viable solutions for reducing hypoxia in the Gulf.

--- *Mike Daniels*

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