

Runoff from Iowa farms growing concern in Gulf

Written by Perry Beeman
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WHAT IS HYPOXIA?

Hypoxia is the low-oxygen condition that sends shrimp and crabs migrating in search of more hospitable waters. When the Mississippi and Atchafalaya rivers spill into the Gulf, fresh water forms a layer on top of the salt water, acting like a lid that keeps surface oxygen from reaching deep water. In a typical year, that means the hypoxia, or low oxygen, lasts in the deep water from spring into fall. Waters with dissolved oxygen of less than 2 milligrams per liter are considered hypoxic. A sign at Martin's Fresh Shrimp in Chauvin, La., last summer encouraged people to buy local shrimp, not imports that account for 90 percent of the U.S. market. Shrimpers blame imports from China, Vietnam and elsewhere for depressing prices. Shrimpers in July were getting about \$3 a pound for their catch. Years ago, wholesalers were paying as much as \$9 a pound.

ABOUT THIS PROJECT

Environmental writer Perry Beeman of The Des Moines Register traveled in July to Terrebonne Parish in coastal Louisiana, a center of the \$400 million U.S. shrimping industry. It has been shaken by a succession of blows: hypoxia caused largely by runoff from farms in Iowa and the Upper Midwest, the 2010 BP oil spill, high diesel prices, lower shrimp prices and the loss of large swaths of coastal wetlands. Beeman interviewed dozens of shrimpers, crabbers, fishing-charter captains, farmers, scientists and government officials. He examined data and documents from the U.S. Department of Agriculture, U.S. Geological Survey and U.S. Environmental Protection Agency, state data from Louisiana, and results of dozens of scientific studies to measure progress by state and federal authorities working to stem the flow of soil and nitrogen and phosphorus fertilizers into the Mississippi River. He also joined scientists aboard a research ship in the Gulf to observe their annual trek to measure the dead zone.

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CHAUVIN, La. -- Generations of shrimpers, crabbers and oystermen have set out from this bayou village to net their catch.

They share an emotional bond with Iowa's farmers: Both harvest nature's bounty to earn a livelihood. These fishermen depend on the sea, just as the nation's top corn growers rely on the rich Midwest soil.

But there's a key difference. Iowa farmers always know where they'll find their crop. For those who work these waters, locating their harvest has become an increasingly taxing game of hide-and-seek.

Nitrates from the fertilizer and manure that Iowa's farmers apply to their fields, mixed with sewage and runoff from suburban lawns, flow 800 miles down the Mississippi River to the Gulf of Mexico.

There, the potent blend feeds algae that bloom, die and decompose, robbing the Gulf's waters of oxygen and creating a so-called dead zone — also known as hypoxia — each summer along Louisiana and Texas. Shellfish and other creatures capable of moving to more hospitable waters do so. Those that can't perish.

Dead Zone: [Read more Dead Zone coverage, plus find photos, videos and infographics.](#)

Since the dead zone's discovery four decades ago, the federal government has spent billions of dollars —

no one can say exactly how much — to study its origins and reduce its impact. But instead of slowing, the toxic flow of nitrates has increased — along with the average size of the dead zone, a Des Moines Register investigation has found.

In Iowa alone, farmers have received \$3.3 billion in federal payments since 1995 from the Conservation Reserve Program — more than any other state. The program is intended to reduce runoff and erosion and preserve wildlife habitat by encouraging land owners not to plant crops on land most vulnerable to erosion.

The U.S. Department of Agriculture has spent another \$223 million over the past two years on water quality improvement projects in Iowa and other states in the Mississippi River watershed.

Yet despite such efforts, the bond of river and nature between Iowa and Louisiana has grown ever more strained: What helps one crop thrive causes the other to move on or die.

Among the Register's findings:

- Nine states account for 75 percent of the nitrates flowing into the Gulf. Over 11 percent of that comes from Iowa, making it and Illinois, which contributes more than 16 percent, the two largest sources.
- The vast majority of that nitrate pollution — about 70 percent — is the result of agricultural runoff, according to the U.S. Geological Survey. And as demand for corn has soared in recent years, farmers in Iowa and elsewhere have faced increasing pressure to plant more acres and use more fertilizer.
- Voluntary programs, including some backed with billions of dollars in federal subsidies, have failed to stem the fertilizer runoff rushing downstream to Louisiana. Even as efforts were under way to reduce runoff 45 percent by 2015, data show nitrate levels have instead jumped another 10 percent since 1980.
- Some of Iowa's neighboring states — Minnesota and Wisconsin among them — limit how much nitrogen or phosphorus can enter waterways. Iowa's political leaders, farm organizations and many individual farmers have opposed similar restrictions.
- Elevated nitrate levels in rivers and streams are also exacting a toll in Iowa, causing bacteria outbreaks in lakes, threatening fish populations and triggering higher water treatment costs. That means bigger water bills for residential and business users.

To be sure, few people here — from the governor to the Gulf fishermen whose livelihoods are in jeopardy — underestimate the importance of agriculture in Iowa and throughout the Midwest. They understand the region feeds the nation.

In an interview with the Register, Louisiana Gov. Bobby Jindal said he'd like to see more progress more quickly. But he stopped short of calling for tough regulations in farm states upstream.

Jindal said restoring the Gulf will take cooperation among the states.

"I think it's a national treasure we all need to be worried about," he said. "We all have to work together on using the best science, the best techniques when it comes to soil management. That's good for farmers as well. There are things we all can do."

Jindal's counterparts in Iowa, even those of different political stripes, also oppose mandatory measures that might limit fertilizer use.

Gov. Terry Branstad and U.S. Agriculture Secretary Tom Vilsack worry about the damage that could do to agriculture, a vital part of the state's economy.

“We want to do all that we can,” said Branstad, a Republican. “But we have to be careful of unintended consequences of overreaction and over-regulation. That can be devastating.”

Vilsack, a Democrat and Iowa’s governor from 1999 to 2007, agrees. He favors voluntary programs that would reward farmers who choose improved conservation practices.

“You start regulating and people look at how to get around it,” Vilsack said. “If you don’t have the capacity to enforce it, what good does it do?”

Shrimp vs. corn

Former shrimper Dirk Guidry sold his boat and opened a pizza restaurant in this town of 2,900 people, about 70 miles southwest of New Orleans.

He grudgingly accepts the economic and political realities facing many of his friends and neighbors still in the shrimping business.

“Corn is a more important crop in the U.S. than shrimp. You have to have corn, but you don’t have to have shrimp,” said Guidry, 56. “But that has an effect on us. I don’t think people in Iowa, Illinois and Nebraska understand that.”

Some years the problem is worse than others. Thanks to the prolonged drought that has gripped the Midwest and reduced the Mississippi and Missouri rivers to relative trickles in places, this year’s dead zone is the fourth-smallest on record.

Even so, the Gulf hypoxic zone in July measured 2,889 square miles. That’s the equivalent of about 5,550 average-sized Iowa farms of 333 acres — each no longer able to grow corn or soybeans, graze cattle or support life of any kind.

It’s also about half again larger than the 1,930-square-mile target that a federal task force in 2001 hoped could be achieved by 2015. Even the most hopeful scientists and researchers now admit that goal is beyond reach.

“We obviously aren’t going to get there,” said Nancy Rabalais, an aquatic scientist who has studied the Gulf dead zone annually since 1985 for the Louisiana Universities Marine Consortium, one of the foremost marine research centers in the U.S.

Shrimpers' crop is moving, shrinking

The runoff from Iowa and elsewhere in the Midwest has set in motion profound consequences in the Gulf of Mexico — not only for shrimpers, but for other commercial fishermen and the related industries they have spawned.

The Gulf is the nation’s most productive shrimping area, producing 82 percent of the U.S. total in 2010, worth \$340 million at the dock, federal records show. Louisiana accounts for more of the haul than any other state, about \$130 million annually.

But the Gulf isn’t just about shrimp.

Finfish and shellfish landed by commercial fishermen total about \$660 million a year. It’s also a huge part of the region’s recreational and tourism industry. Anglers tallied 21 million trips in 2010, pulling some 145 million fish weighing a combined 59 million pounds from the Gulf and surrounding waters, federal data show.

And just as Iowa corn growers spin off jobs in related businesses, the seafood industry also has its own legion of processors, distributors and the like. The National Marine Fisheries Service has reported that the commercial fisheries of the Gulf and bordering waters generate about \$10.5 billion in sales and \$5.6 billion in income annually, supporting 200,000 jobs.

Louisiana brown shrimp landings fell from 72 million pounds in 1990 to 17 million in 2010, according to the most recent available data.

The poorest catches of the past two decades occurred after the record floods of 1993 pushed the dead zone across a larger area.

As shellfish migrate in search of waters containing more oxygen, shrimpers such as Darren Martin must venture farther out to sea in pursuit of his catch.

“Unlike a farmer, we can’t see the crop,” said Martin, 46, who’s been shrimping nearly all his life. “If you’re used to going to a certain area, and you go out and the dead zone is there, you’re in trouble.”

The farther shrimp boats must go, the more shrimpers pay in fuel and labor costs. Those who cast their nets into empty waters stand to lose as much as \$2,000 a day.

Like many here, Martin shrugs off what the changes have meant for his livelihood with an it-is-what-it-is kind of stoicism not unlike an Iowa farmer talking about a corn crop threatened by drought or hail.

“The saying goes: ‘Everything good comes down the Mississippi — and so does everything bad,’ ” Martin said as girlfriend Lillie Bishop sold the previous day’s catch out of ice chests at their roadside stand.

That doesn’t keep some from envying the corn farmers’ safety nets, however.

The federal government makes direct payments to corn growers that boost their income, but shrimpers are on their own, they grumble. Most Iowa farmers also buy taxpayer-subsidized insurance against crop losses; shrimpers have no such protection.

“If a corn farmer has a bad crop, the price goes up,” shrimper Kenneth Theriot, 59, said of the supply-and-demand economics of agriculture as he painted the hull of his 50-foot shrimping boat.

“We have a bad season, and the price goes down,” he said, referring to the imported shrimp from China and other parts of the world that have flooded the U.S. market in recent years.

Corn grower: Don't hurt us to help them

Crop and animal production is a \$7.4 billion industry in Iowa, accounting for more than 5 percent of the state’s gross domestic product annually.

But Iowa also is home to rivers that are among the nation’s biggest contributors of Gulf-bound nitrates into the Mississippi.

A 2009 analysis of federal water quality data in various small stretches of streams in the Mississippi River watershed showed that portions of the Lower Wapsipinicon, Lower Cedar, Middle Des Moines, Lower Iowa, Boone and Middle Cedar were among the 100 largest contributors of Gulf-bound nitrates.

Meanwhile, fertilizer usage, after falling in the 1990s, continues to rise in Iowa and elsewhere. Long term, use is up. It’s a tough trend to follow, because no one tracks manure applications, which some say is being used increasingly to offset the cost of commercially produced fertilizers.

Five decades ago, nitrogen fertilizer applications in the Mississippi Basin totaled less than 1 million metric

tons a year. Today's figure: 6 million metric tons. The increase has come despite huge price increases for anhydrous ammonia, one of the most commonly used fertilizers. It now costs nearly \$800 a ton — about double the cost in 2004.

One trade group, the Fertilizer Institute, suggests that farmers may be using more fertilizer because they are planting more corn acres and the new hybrids demand more nitrogen.

“Things will swing with the number of corn acres, and improved seeds might need a little more fertilizer,” said spokeswoman Kathy Mathers.

Bruce Rohwer, president of the 6,000-member Iowa Corn Growers Association, has farmed two miles north of Paullina in northwest Iowa since 1975. He grows corn and soybeans on 1,000 acres and raises 20,000 hogs a year in confinements.

He wants the Louisiana shrimpers — and Iowans, for that matter — to know that farmers have no reason to intentionally over-fertilize their fields.

“It is cash out of your pocket,” said Rohwer, 60. “It's the note at the bank to put nutrients on the ground for the next year's crop. It is not in our interest for any of that to get away.”