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Gulf of Mexico Hypoxia Working Group
National Centers for Coastal Ocean Science
WS 13446
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Dr. Rick Halpern requested that I send the enclosed comments. This is a corrected version and is intended to replace the copy that was previous mailed.

If you should have any questions, please feel free to contact us.

Sincerely,

Alice Killian
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Comment on the Reports of the Hypoxia Task Groups to the Committee On Environment and Natural Resources and the Gulf of Mexico Hypoxia Work Group

**Submitted on behalf of the Center For Global Food Issues
By Richard A. Halpern, Ph.D., Adjunct Fellow**

The Great Disconnect

The Hypoxia Work Group's report to the National Science and Technology Council's Committee on Environment and Natural Resources (CENR), assessing "the causes and consequences of hypoxia in the Gulf of Mexico" finds that:

1. There are no discernable, measurable, or documentable "detrimental ecological and economic effects" to the Gulf environment or its fisheries from hypoxia. (Topic 2, p. 52);
2. Such ecosystem disturbances in the shallow continental shelf as can be documented are as likely to be the result of trawling or "other sources of stress." (Topic 2, p. 50);
3. Even during the recent unprecedented extremes in hypoxic conditions (1993-97), Louisiana's coastal fisheries flourished, maintaining "energy flow to productive fisheries (crabs and shrimps) that depend on the bottom" (Topic 2, p.9)

In short, this exhaustively researched and peer reviewed investigation has concluded—without qualification—that there is, at present, no reason to believe that hypoxia has ever posed or now poses an environmental or economic threat to the Gulf or its fisheries.

Nevertheless, and notwithstanding its own findings, the Work Group recommends that five million acres of the world's most productive farmland be

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taken out of production, and that yields throughout the Mississippi River Valley watershed be reduced, forcing smaller farmers out of business, through a mandated 20 percent reduction in nitrogen inputs. (Topic 6, p. viii).

The disconnect between the work group's findings and its recommendation is so complete and so manifest, that in order to justify the implementation of CENR's agenda to reduce agricultural production in the Mississippi River Valley, Task Group 6 is compelled to argue seriously and publicly that the failure to discover any economic benefit or scientific rationale for reducing nitrogen in the Mississippi need not be an obstacle to the CENR plan.

The group, led by Purdue agricultural economist Otto Doering, concludes that the CENR agenda can go forward because, after all, "important public decisions are seldom made on the basis of strict benefit/cost analysis, especially when complete benefits cannot be estimated." The intellectual and scientific bankruptcy of this line of reasoning is staggering. Even so, in the case of the Gulf, we are dealing not with a failure to estimate "complete benefits" of proposed reductions in nitrogen, but a complete and utter failure to discover any benefit at all.

In fact, all indications are that reducing nitrogen inputs from Mississippi Valley agriculture will harm the Gulf fisheries, disastrously restrict American agriculture, and endanger the world's most threatened environments without any measurable or sustained benefit to anyone or anything.

The Black Sea and Other Red Herrings

Having failed utterly to find a present risk to the Gulf, the Topic 2 task group, led by Virginia Institute of Marine Science's Robert Diaz and Andrew Solow of Woods Hole Oceanographic Institution, have hit on a rationale for the assault on agriculture that may give marine science itself a bad name.

"Currently, there are no hypoxia effects on fisheries," they concede, but, they warn, conditions could worsen. "In the face of worsening hypoxic conditions, at some point fisheries and other species will decline, perhaps precipitously," they hypothesize. But, Diaz, Solow and company know perfectly well that there are no "worsening hypoxic conditions" in the Gulf. The hypoxic zone's sudden expansion to 7,000 square miles could only have resulted from the Great Flood of 1993—a 500-year event, the "most devastating flood in modern United States history," according to the USGS. If this cataclysmic expansion of the hypoxic zone produced no discernible negative impacts, hypoxia can never pose a serious threat to the Gulf without changes in the Mississippi Valley of an order than can be hardly imagined.

We can expect a 7,000-square-mile hypoxic zone once every 500 years. For the fisherman who enjoyed enhanced catches during the mid-90s, that may come as bad news.

By the summer of 1998, the hypoxic area had already receded to 4,800 square miles, as the aftermath of the Great Flood waned. The impression, therefore, that

is being foisted on the public—and that is allowed to go uncorrected by EPA, NOAA, and CENR, by Dr. Nancy Rabalais and the Sierra Club—is that hypoxia is a steadily worsening condition, and that—if not mitigated—it will eventually bring ruin to the ecosystem. This is an unscientific, pernicious untruth and a discredit to the community that fosters it.

Not content with the inanity of their prediction of future doom, however, the Topic 2 Task Group, proposes one of the most egregiously irresponsible comparisons ever to insult an intelligence. They suggest that the Gulf of Mexico could become another Black Sea—severely impacted by hypoxia.

Compared to the Gulf of Mexico, the Black Sea is a stagnant pond. It has less than one-third the area, one-fifth the volume, and, for all practical purposes, is landlocked. Its only outlet is an opening 800 yards wide in the Bosphorus. By contrast, the Gulf's mouth stretches 450 miles from the Yucatan to the Florida peninsula. Currents in the Black Sea are so weak that more water actually flows in through the Bosphorus than escapes.

Hypoxia has been a known and well understood phenomenon in the Black Sea for many years, and it has nothing to do with agriculture. According to Russian oceanographers Luch Fomin and Vladimir Goncharov, the Black Sea's "lower levels are, to all intents and purposes, almost 'dead'—not as a result of modern pollution but because of [natural] continued weak ventilation of the deep layers."

Then Task Group 2 proposes the even more bizarre and preposterous comparison of the Gulf to the Kattegat. The Kattegat is a strait not a gulf or a sea; it is a narrow, elongated channel that connects the North Sea and the Baltic, with good bits of Denmark blocking the flow of water between them. The Gulf of Mexico has a surface area of 1.5 million square miles, the Kattegat less than ten thousand square miles. The Gulf's mean depth is more than 4,500 feet. The Kattegat's is 84 feet.

The Process Is Corrupt

In inviting public comment on this report, EPA does not state that the purpose of the report and of soliciting comment is to determine whether nutrient reductions are at all necessary or appropriate. Rather, it is to assist the CENR Gulf of Mexico Working Group to "provide ecological and economic analysis of various options for reducing nutrient loads carried by the Mississippi River to the Gulf of Mexico."

Again, this is not surprising. The public law calling for the hypoxia assessment was passed by a complacent Congress that accepted inaccurate findings from a Senate Commerce Committee that allowed itself, also, to be deceived by the *a priori* speculations of "scientists"—individuals with doctoral degrees in scientific fields—who allowed prejudice to preempt science in their approach to this issue. In the 1998 Coast Guard Authorization Act, Congress unfortunately did not order an assessment that would first discover the facts, and, then, determine what, if any, remedial action was necessary. No. It incorrectly assumed that hypoxia,

caused by "harmful algal blooms" was "harmful or fatal" to fish and shellfish, and responsible, in part, for \$1 trillion in economic harms. Instead of sponsoring an honest, open-minded inquiry, Congress mandated a witch hunt, an assessment with a preconceived conclusion to guide the president in developing a plan "for reducing, mitigating, and controlling hypoxia in the northern Gulf of Mexico." And he must do it by March of next year.

The outcome of the assessment process is hardly to be wondered at; it was, in fact, premeditated and predetermined—long before the work group was organized or its inquiry begun.

As early as 1992, Purdue University professor Stephen B. Lovejoy, in a report to the U.S. EPA Gulf of Mexico Program, plainly acknowledged the lack of any credible water quality data for the Mississippi basin, "Measurements of actual concentrations of pollutants and flows [are] nonexistent, both temporally and spatially," he concedes ("Sources and Quantities of Nutrients Entering the Gulf of Mexico..." EPA 800-R-92-002, p. 48). Neither does Dr. Lovejoy offer any scientific justification for the conclusion (already firm in 1992) that nutrient reductions are necessary to the health of the environment. Rather, the effort to reduce nutrient loading in the Mississippi, according to Lovejoy, is driven by "social forces suggesting that agricultural practices should be less environmentally degrading" (p. 3) Clearly, "social forces," means public opinion—in this case, the opinion of a public that has been prejudiced by the continual repetition and broad circulation through the media of the *a priori*, unscientific judgements of government agencies, environmental groups, and university researchers whose speculations are now discredited by their own study.

It is no secret that public opinion drives policy. But it is a national scandal when those describing themselves and presenting themselves to legislators and the public as "scientists" abandon their ethical responsibilities to scientific method by subscribing to and recommending policy that is inconsistent with their own findings of fact. This is corrupt practice unworthy of "seekers after truth," and deserves to be publicly condemned.

The Stakes Are High

The Fisheries

According to Louisiana marine fisheries officials, "the harvest of the commercial and recreational marine fishery resources of Louisiana is valued at over one-half billion dollars annually, and generates over 1.2 billion dollars in economic activity in the state of Louisiana." In 1994, at the height of hypoxia's historic expansion to 7,000 square miles, when hypoxia's impacts should have been most devastating, fisheries landings off the Louisiana coast surpassed 1.7 trillion pounds, and were worth nearly \$340 million to the working fishermen of the region—the largest, most valuable catch in nearly a decade.

"Louisiana's fisheries, and to a large extent those of the northern Gulf of Mexico," the state's fisheries officials reported at an EPA hypoxia conference in 1995, "depend on the Mississippi River for their existence. The sediments and nutrients carried by the river built the Louisiana coastal marshes. Today, as a result of leveeing [sic] the river, nutrients and sediments that once built and maintained Louisiana's coastal marshes are being deposited off the Continental Shelf in the abyssal depths of the Gulf of Mexico. Decreasing the nutrient levels in the Mississippi River may serve to lessen the severity of hypoxia in coastal waters, but also may impact the food web of the northern Gulf and decrease fisheries production," they warned.

If hypoxia were, in fact, a demonstrated detriment to the Gulf environment or fisheries, then lessening its severity would clearly be appropriate and desirable. Alabama researchers also report, however, that hypoxic events in Mobile Bay have been documented "since the mid-1800s," and, "despite the frequency of these events [hypoxic conditions exist approximately 50 percent of the time], fisheries landings in Mobile Bay remain high and researchers are now addressing the question of whether such events (that may help maintain highly productive "pioneer" communities) may have a beneficial effect on secondary production in the ecosystem." In other words, Alabama officials are assessing the *beneficial* impacts of hypoxia.

Donald Boesch, an expert on hypoxia at the University of Maryland and a leading researcher involved with the Chesapeake Bay Program, without apparent embarrassment, openly acknowledged at the 1995 EPA conference that there has never been a scientific effort to answer even the most fundamental questions regarding hypoxia. There has been no attempt to determine whether or not hypoxia in the Gulf, or the Chesapeake Bay for that matter, is a natural or anthropogenic phenomenon, whether it is getting worse or better, or to establish any connection between the phenomenon and long term ecosystem response.

Boesch even noted that there is no evidence whatever that hypoxia has ever adversely affected Chesapeake Bay fisheries.

There is, then, no scientifically credible rationale to support a belief that hypoxia will ever harm, let alone ruin, the Gulf or its fisheries. If anything, the arbitrary reduction of nutrients upon which the fisheries are dependent, will decrease production in high-flow years, and cause potentially catastrophic reductions during persistent dry periods. The self-defeating regulation of Midwest agriculture now being proposed so irresponsibly by the Work Group is more likely to starve the fisheries, in fact, than to provide any conceivable benefit.

American Agriculture

If the administration persists in this idiotic plan to mitigate what does not require mitigation, the costs will be immense, not only to the fisheries, but to American agriculture, to the national GDP, and to the balance of trade. It will seriously harm

our potential as the greatest supplier of food and fiber to a world that will need them, if our wildlife and our richest and most diverse ecosystems are to survive beyond the first half of the twenty-first century.

Initially, our annual domestic economic losses will be measured in the hundreds of billions of dollars. Before long, our losses will be reckoned in the trillions. Agriculture is the largest single contributor to gross domestic product, worth approximately \$3.4 trillion a year to the economy. The value of Mississippi Valley agriculture is approximately \$1.7 trillion to \$2.0 trillion a year. If the retirement of 5 million acres and mandated yield reductions result in an overall decline in production of 15%, value lost will exceed \$250 billion a year. Moreover, agricultural exports, the single most important factor in sustaining our balance of trade, will certainly experience further significant decline.

In the final analysis of the Work Group's scenario, everybody loses. As Dr. Doering's group 6 observes in crisp, sanitized jargon "costs are imposed on some who are constrained to abandon profitable production in order to meet nitrogen loss goals." What this means in plain English is that the smaller, less-efficient, less-resilient family farm will go out of business. At the other extreme of the scale, according to the work group "the primary concern of the agribusiness industry is loss of sales in an expanding free market environment where market share is voluntarily constrained to meet environmental objectives." What this means is that production we give up in order to achieve entirely non-existent environmental and economic benefits will be replaced by production in other parts of the world—places without the environmental scruples we can afford, without the technology to use fertilizers and pesticides with minimal risk to consumers and the environment.

Dr. Doering and his colleagues are right. American farmers, agricultural suppliers, equipment manufactures, food processors, transportation companies may suffer significant financial losses, consumer prices in the United States will probably rise. But what Doering *et al* don't say—because they are apparently oblivious—is that losses to the American economy will pale in comparison to the price that will be paid by world wildlife and the world's environment.

The Environment

If the world's population peaks at 8.5 billion sometime toward the middle of the next century, as most forecasters predict, and demand for high quality protein, fruits, vegetables, and cotton in the developing world keeps pace with increasing levels of affluence, we will need to increase world agricultural output threefold. At current levels of production, with high yield cropping and intensive livestock husbandry, we are using 6 million square miles of the earth's available surface for agriculture. Without the benefit of today's high-yield farming, we would have to plow another 15 million square miles of wildlands just to meet current demand. Without high-yield agriculture, we would have to clear the remaining wildlands

from all of the United States, South America, Europe, Asia, and a good part of Africa. Where would wildlife and wilderness survive?

Clearly, tripling the world's food supply without both concentrating production and increasing yields on the world's best existing farmland would mean the collapse of the global environment. The rain forests—already being destroyed at appalling rates for low-yield, unsustainable, slash-and-burn agriculture—would be gone. Researchers have found more wild species in five square miles of rain forest than on the entire North American continent. Losses to biodiversity, wildlife habitat, and to species would, therefore, be calamitous.

Providing adequate nutrition and clothing for the people of the 21st century while protecting the environment, will be an extreme test of humanity's creativity and resourcefulness. It will require heroic achievements in agronomy, an unprecedented opening of world markets to farm products, and development of still safer and more reliable technologies for storing, transporting, and distributing food. It is to these efforts that we must devote our resources, energy, and ingenuity.

In this enterprise, if we do not optimize our use of the world's prime farmland—the Mississippi River Valley, the Argentine Pampas, the Paris Basin of France, and the Upper Euphrates Valley of Turkey—we invite human and environmental disaster.

As custodians of these prime farmlands, we have, in fact, a global responsibility to raise their yields as high as we safely and sustainably can. If even five million acres in the Mississippi River Valley are intentionally taken out of production and millions of other acres are forced into lower-yield regimens, as the Work Group incredibly proposes, we will have taken a fateful first step down the road to environmental catastrophe.

To take such action, without justification, simply to appease an unreasoning, ill-advised, and scientifically unsupportable prejudice against high-yield agriculture, would be criminal—an assault against Earth's most imperiled ecosystems and against the children of the new millennium's emergent nations.

Every senseless, unwarranted, and unjustified limitation that the environmental movement succeeds in placing on American agriculture further increases the likelihood of global environmental devastation. Is this, truly, what EPA, NOAA, CENR, the Gulf of Mexico Hypoxia Work Group, the Congress and the President really want?

Let us hope not. But unless the President is prepared to act on his task force's finding that there are no "detrimental ecological and economic impacts," and ignore their ludicrous recommendation to sabotage Midwest agriculture, that is what they—and we—are going to get.