

In Oil Spill, University Scientists' Expertise Was Dumped

Missteps in Gulf disaster point to need for a research emergency-response team

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In what could have been one of the few slivers of good fortune in the murk of the Gulf of Mexico oil disaster, a university research vessel was stationed just 10 miles away when the Deepwater Horizon rig collapsed three months ago after a fiery blast.

Scientists on board the 116-foot *R/V Pelican*, operated by the Louisiana Universities Marine Consortium, immediately began taking sediment and water samples ahead of what researchers hoped would be a wave of colleagues rushing out to map the size and effects of the nation's worst offshore oil spill—and figure out ways to combat it.

That wave never came.

No contingency plan for research was in place. Instead, confusion reigned. Oil-dispersant chemicals were dumped into the Gulf with little idea of the hazards, fisheries were shut and tourist beaches vacated, and key lessons about handling a future spill went largely unlearned.

"Everybody was waiting to be mobilized," said Michael Carron, director of the Northern Gulf Institute at Mississippi State University, of the dozens of available university researchers, "and it just didn't happen."

It didn't have to be that way, according to marine researchers. Government leaders, after past disasters such as the *Exxon Valdez* oil spill in 1989 and Hurricane Katrina in 2005, have been urged to develop a system in which the critical expertise of researchers and institutions can be immediately brought to bear on matters of national urgency, said Frank E. Muller-Karger, a professor of biological oceanography at the University of South Florida.

Instead, the country now digs out from yet another disaster—up to a million jobs lost, and major, continuing environmental consequences—without a clear understanding of the underlying scientific facts. "We have gone through this" in the past, Mr. Muller-Karger said, "and we always end up in the same spot."

Verifying the Facts

One basic failure exposed by the BP explosion is the government's lackluster support of a planned network of regional ocean-monitoring systems. The network, intended to track complex ocean currents in roughly the way the National Weather Service tracks atmospheric conditions, has been getting less than \$40-million in annual federal financing. That's not even a third of the amount recommended by a national commission that studied the matter in 2004.

Scientifically blinded by such decisions, and lacking an emergency corps of scientists, government officials were left to trust BP for weeks on fundamental facts such as the amount of oil and natural gas pouring out of its broken pipeline. Those estimates of 5,000 barrels per day now seem absurdly low.

Once Congress forced BP to make available video of the ruptured well, about a month into the spill, it took Steven T. Wereley, a professor of mechanical engineering at Purdue University, just a couple hours sitting at home to estimate that 70,000 barrels a day of both oil and natural gas were coming out of the pipe. The government's own detailed analysis after Mr. Wereley's calculation put the range at between 35,000 and 60,000 barrels.

BP, with a "budget bigger than most countries," could have reached the same conclusion from the start, Mr. Wereley said. Without pressure from independent experts, "they weren't compelled to find a better number," he said.

The company also made assertions about the safety of chemicals used to disperse the oil, then discounted the likelihood that those chemicals would largely help hide the oil beneath the surface of the Gulf, where university researchers say it has become much harder to track and assess its effects on animal and plant life.

And it wasn't just the company making high-stakes decisions in the absence of rigorous study. The governor of Louisiana, Bobby Jindal, has been aggressively pressing the idea of using huge piles of sand and rocks to block the oil from reaching ecologically sensitive marshes, even as numerous outside experts reject the plan as a costly boondoggle that might even accelerate the flow of water across coastlines.

"Environmental damage resulting from ill-conceived, poorly reviewed coastal engineering may become an additional and unnecessary byproduct of the spill," at least two dozen scientists said in an open letter organized by Robert S. Young, a professor of coastal geology who is director of the Program for the Study of Developed Shorelines at Western Carolina University. The university experts appear to be winning that debate, in part because the threat of oil coating the coastline seems to be receding.

That diminished concern highlights a key way in which further research might actually help BP. Some experts warned that virtually all the spilled oil would eventually foul Gulf coastlines, as happened with the *Exxon Valdez* disaster in Alaska, creating damage that lasts for decades. Others point out that the Exxon spill began along the shore, from a

broken tanker, while the complex nature of ocean currents a mile below the water surface will hand BP a completely different outcome.

Money for Research

The limited record of existing research and the history of previous underwater spills provide little clear evidence about what actually happens to oil caught in the frigid swirl of an ocean, said Lisa Suatoni, a senior scientist in the oceans program at the Natural Resources Defense Council, an advocacy group. There are strong indications, though, that much of the oil might simply get consumed by bacteria before it goes anywhere else, Ms. Suatoni said. It's a highly complicated research question, she said, and one that involves a host of trade-offs. One bad one, for instance, could be that oil-engorged bacteria will form large, smothering blooms, enlarging oxygen-deprived dead zones deeper in the Gulf already being fed by fertilizer runoff from farms.

University scientists hoping to help solve such puzzles while remaining independent and free to publish their findings remain in a bind. That's because BP still stands as the chief source of available research money, having announced in May that it would spend \$500-million to support research into the spill and its effects. The company has delivered \$30-million to several groups of universities in the Gulf region to kick off some initial projects.

The federal government's contribution to independent research, by contrast, largely consists of a \$5-million allocation offered through the National Science Foundation's system of "rapid response" emergency grants. Three months into the spill, researchers are "still waiting to hear" about money from the National Oceanic and Atmospheric Administration, the federal agency leading the disaster response, for any work other than that aimed at preparing a court case against BP, said Denis A. Wiesenburg, vice president for research at the University of Southern Mississippi. Congress is working on legislation that could establish a trust fund for ocean research out of oil-company revenue.

Wariness about accepting money directly from BP only intensified after the company offered many university researchers in the Gulf region an opportunity to take paid consulting positions to help the company with its response to the spill. The company backed off after news reports described company-proposed contract language that could restrict researchers from discussing or publishing their findings. BP representatives did not respond to *The Chronicle's* requests for comment.

BP has also been vague about its plans for distributing the bulk of its \$500-million commitment. The company has formed what it called an "independent" advisory panel of academic experts to guide the process. But while praising the credentials of the participants, some experts question the group's true autonomy under a corporate umbrella. Even the federal government has banned its researchers from joining projects that use BP money. "We just don't know how it is going to operate, how much independence the researchers are going to have," said Steven A. Murawski, chief scientist for the fisheries service at NOAA.

Working Together

Some universities, such as Texas Tech, are trying to work around the problem by dispatching researchers with empty expense accounts, hoping to find financing later, perhaps from BP but hopefully also from their state and from private donors. The need is too important to wait, said Ronald J. Kendall, chairman of Texas Tech's department of environmental toxicology.

Mr. Kendall cites sea turtles, which feed off the Louisiana coast but establish nests in Texas, as a prime example of the immediate research needs in a state that thus far has been overlooked by both federal and BP-financed efforts.

Such jostling for research support is an example of turf battles emerging among states, institutions, and individual scientists. The NSF's director for ocean sciences, Phillip R. Taylor, recently sent a letter to all its Gulf grant recipients reminding them of their obligation to fully share all their data. "Any matters related to data propriety, publication embargo, or personal scientific benefit from these activities are secondary to the national need to contain and address this disaster," Mr. Taylor wrote.

That underlines the need for a federally coordinated scientific response to emergencies, says Mr. Carron. Without it, various groups of university researchers, each working on their own projects, may not be willing to abandon their commitments, said Mr. Murawski, from NOAA. "This isn't a top-down situation," he said. "People don't take orders from us."

The researchers who were on the *R/V Pelican* when the Deepwater Horizon rig collapsed nearby were using federal money to study hydrates, the frozen gas molecules that occur naturally in the seabed and were later blamed for the one of the failed attempts to shut off the gusher from the broken pipeline. The *Pelican* crew took some samples of the contamination caused by the BP rig but didn't have enough storage or chemicals to do more, said Carol B. Lutken, associate director for marine programs at the Mississippi Mineral Resources Institute, part of the University of Mississippi.

The failure of government to have an emergency scientific-response capability may ultimately prove to be one of the most important shortcomings brought to light by the BP disaster, said Mr. Carron. Such a system could help the country deal with a range of possible sudden threats to human health and safety, such as a meteor that could wipe out much of the world's population, Mr. Carron said. "The problem is that with low-probability, high-impact events, we tend not to prepare very well because there's no immediate payoff," he said.

Mr. Murawski said he agreed that the BP spill pointed out the need for some kind of improvement in responses, if even just the creation of an emergency "call list" of university experts. "We're going to have to look at the lessons learned from this," he said.