



Lack of basic research cripples scientists when assessing toll of BP oil spill on Gulf's natural system

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Schools of multiple species of baby fish are swarming around the rocks at Perdido Pass this week. The tiny fish, all under an inch, prove reproduction is occurring, but scientists can't say whether adult populations have returned to normal after the BP oil spill. (Ben Raines/Braines@AL.com)

Three years after the BP oil spill, scientists are left scratching their heads when asked if populations of sea creatures in the Gulf of Mexico have returned to normal.

No one knows the answer to that most central question, the scientists say, because of a lack of basic monitoring of marine populations, both before and after the spill.

While millions of dollars are being spent studying the effect of dispersants and oil on the eggs and larvae of anchovies, killifish, and tuna, and millions more are dedicated to looking for the spill's signature contamination in corals, oysters and other creatures, scientists say it has become nearly impossible to find grants to fund good old fashioned

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population surveys.

Without a thorough understanding of how the Gulf should look in terms of the creatures living in it, it will be difficult, if not impossible, to determine what damages may have been caused by BP's oil.

Meanwhile, officials with the company suggest the Gulf is returning to normal.

"As a result of our \$14 billion cleanup effort, BP funded early restoration projects as well as natural recovery processes, the Gulf is returning to its baseline condition – the condition it would be in if the accident had not occurred," read an unsolicited statement sent to AL.com by BP's Craig Savage on April 2nd.

"There are some obvious things we ought to be doing and we are not doing them. What I worry about is how little monitoring is going on now," said John Valentine, head of the Dauphin Island Sea Lab marine research facility in Alabama. "We had a little flurry of activity funded through BP right after the spill, but that's all over... It's just like what happened after Ixtoc. They had the money, were out there doing the monitoring, and once the well got capped, that was it. They just totally stopped. That's a very similar experience to what's happened here from what I can see. Monitoring is just not sexy to the funding agencies."

In the first two years after the spill, Valentine conducted trawl surveys in Alabama's coastal waters that showed **fish, shrimp and crab populations were about triple the pre-spill level.** Sharks were also present in greater numbers than normal. At the time, the increase in sea life was attributed to the months-long fishing closure enforced in the Gulf of Mexico. In Alabama alone, the fishing closure meant that more than 600 million pounds of crabs, shrimp, and fish were not harvested by the commercial fleet the summer of the spill.



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This mess of tiny mangrove snapper, speckled trout and pipefish were caught in a single trawl around Horn Island. The trout and snapper were all smaller than two inches long and perfect replicas of their parents. (Press-Register/Ben Raines)

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The increased abundance of aquatic creatures was also seen in sampling conducted through the summer of 2011, according to Valentine's research. But then the money for the monitoring dried up in 2012. Asked how fish populations were doing this year, Valentine said he had no idea.

"In terms of making any long term predictions about the health of the Gulf, about the only thing we have to assess it with now are fishing reports," Valentine said. "There probably was damage, but it will be very hard to identify because the federal government stopped fishing. Whatever carcasses were out there, they sank to the bottom. The fishing closure may end up outweighing the impact of the oil in some ways. But we will have a very difficult time showing that."

Past experience suggests the next few years may be critical for marine populations. Scientists point to the case of the herring in Prince William Sound. Herring are the most important forage fish in Alaskan waters.

After the ExxonValdez spill, scientists initially believed the herring population had escaped unscathed from the spill. Commercial fishing for them resumed, with large annual harvests. **Within eight years, the herring population crashed and has never recovered.** In part, scientists concluded the young born the year of the spill were vulnerable to disease and other stressors. The fear in the Gulf is that if a similar problem developed among commercially important species, no one would notice until it was too late due to the lack of traditional monitoring.

The state of Alabama has conducted a limited amount of monitoring since the spill. Overall, the populations of brown shrimp, Atlantic croaker, spot and hardhead catfish have held relatively steady between 2008 and 2012, said John Mareska, a biologist with the Alabama Division of Marine Resources.

"These are historically some of the most abundant species in Alabama waters. Given natural variation in abundances we do not detect a significant trend up or down for most species," Mareska said. "However, white shrimp abundances appear to be somewhat lower than in previous years."

Other research has shown that oil was detectable more than a year after the spill in corals growing on drilling platforms 100 or more miles from the spill site. Fish across the northern Gulf were found to have a higher incidence of disease, including skin lesions, more than a year after the spill, according to a federal study. And dolphins have washed ashore dead in record numbers since the spill.

Much of the research data that has been collected by federal scientists, and by scientists who worked under federal grants, remains tied up in the court case against BP. Confidentiality agreements signed by scientists working for the government have created something of an information vacuum, several researchers said, preventing them from sharing their results with others.

Complicating matters was a decision that none of the \$500 million BP donated to fund scientific research would be used to fund monitoring. The money was used to create the Gulf of Mexico Research Initiative.

The Research Initiative money has been well spent, said Monty Graham, director of marine sciences at the University of Southern Mississippi, but a giant gap in basic research remains.

"It's missing. Everyone knows monitoring is important, but no one wants to fund it because it is so basic," said. "Monitoring is expensive, it eats up budgets. It's like life boats on the Titanic...no one wants to pay for it, and it takes too much room from the glamorous science, but boy everyone needs it once disaster strikes."

There has not been a "true baseline survey on the continental shelf since the 1970s," Valentine said. Without an understanding of what "normal" is in the Gulf, it is impossible to say whether the system is out of balance, he said.

"The folks that say the sky is falling don't have any more data than the rest of us who say probably not, but how do you prove it? All you can do is look at the anecdotes," Valentine said.



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Daggerblade shrimp, this one about the size of a grain of rice, are the most common creatures in Alabama's coastal marshes. Scientists found their numbers dropped the year of the BP oil spill, but rebounded to pre-spill levels in 2011. This species spends its entire life cycle in the marsh. The abundance of other creatures was not affected. (Ben Raines/braines@al.com)

Small studies looking at specific locations have shown what happened on a localized basis, which is important. For instance, **a three year study conducted in an Alabama marsh** suggested that populations of fish and shrimp experienced a decline in 2010, but rebounded to 2009 levels in 2011. Ryan Moody, author of the study, said the results are specific to Alabama coastal marshes and the small creatures that inhabit them. The results, he said, cannot be used as a substitute for a more holistic examination of the entire coastal system.

"It is troubling that three years after the spill we still do not have the one thing we should have had before the spill...comprehensive and integrated monitoring of the entire Gulf," Graham said.

Graham **studied the movement of oil through the Gulf's food chain** during the spill, beginning with the presence of carbon from the oil in plankton. He said the only change in the planktonic community he was comfortable attributing to the spill was a six

week decrease in population. What effect that had on the Gulf, he said remains uncertain.

“The Gulf is incredibly (complicated), and we are coming off of two extraordinary winters,” Graham said, explaining that cold, wet winters cause all sorts of shifts in the populations of sea creatures, regardless of the presence of oil in the system. “While I can’t say the oil spill is or is not contributing to changes in the ecosystem, it sure is going to be difficult to lay blame on the spill when we don’t really understand the background variability. Doesn’t mean we can’t or that we shouldn’t try, just that it is a mighty tall task that is going to take some time, a lot of data, and some significant brains working on it.”

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