

Scientists start to piece together damage puzzle of BP spill

November 22 2010, By Renee Schoof

The search for what the BP oil well blowout did to the Gulf of Mexico already has gone to extraordinary lengths: more than 125 research cruises covering hundreds of square miles and taking thousands of water and sediment samples.

In recent weeks, scientists have reported finding a garden of dead and dying corals covered in brown gunk, and evidence that petroleum compounds moved up the food chain from bacteria to plankton. More research voyages are planned, and labs are busy as scientists try to pull together a more complete picture of the damage below the surface and chart a recovery plan.

The discovery of the dead corals earlier this month, the first finding of possible damage from the oil on an animal community, is probably just one example of decimated habitat, said Michael Crosby, senior vice president of Mote Marine Laboratory in Sarasota, Fla.

"We saw all those horrible examples of immediate impacts at the surface," Crosby said. "Now multiply that by orders of magnitude to get what's happening below the surface."

What happens in the deepest parts of the Gulf could have an impact on [fish populations](#) and other species, he added, because various parts of the ecosystem are connected.

Scientists discovered the recently dead and dying [coral](#) colonies Nov. 2

about seven miles southwest of the wellhead at a depth of 4,600 feet. The lead scientist on the mission, Pennsylvania State University biology professor Charles Fisher Jr., said that from the minute his team members came to the site, they realized it was unlike anything they'd seen in a decade of studying the Gulf's deep corals.

A hard coral colony had branches covered in a brown material, and a nearby soft coral community had extensive areas that were bare of tissue and covered in a similar brown substance, Fisher reported. Some of the dead and dying corals had discolored, immobile brittle stars - a kind of starfish - attached to them.

Fisher said the observations suggested that the corals were destroyed by oil, chemical dispersant, depleted oxygen due to organisms consuming the oil or some combination of effects from the spill. He said in a statement that the evidence was "a smoking gun."

Government scientists on the same expedition agreed that something had damaged the corals recently, but they reported that it wasn't immediately clear whether it was BP oil. Lab analysis was still under way, the National Oceanic and Atmospheric Administration said last week in response to questions.

The federal government called for extensively monitoring the oil below the surface on Aug. 13. NOAA said that government and academic researchers then collected more than 31,000 water and [sediment samples](#), completing the work in late October. NOAA reported Thursday that the data would be made public after final quality reviews of the analysis.

In a written reply to questions from McClatchy Newspapers, NOAA said:

-Near-shore samples show "a very small amount of residual oil" that's

"being degraded naturally as well as being recovered where possible."

-Deep sediments haven't turned up with large quantities of oil. "Some sediment samples have revealed oil sheen, which is not a surprise following a release of this magnitude at a depth of 5,000 feet."

Three NOAA research ships were out or finishing cruises this month to survey whales and dolphins and the effects of oil and dispersants on the prey species they eat. Researchers also are looking at small fish, such as herring, for an indication of how the food chain is faring. Teams are surveying shrimp, snappers and other species as well, to see how abundant they are.

University research missions also continue. The University of South Florida's ship, the Weatherbird II, is scheduled to finish a cruise Sunday to study the impact of the oil and dispersants on sediments and seafloor communities of the West Florida shelf and continental slope.

Research funded by BP also is under way on how the oil affected the base of the food chain, reefs and marshes, sharks, dolphins and many other species.

"There is just an outstanding level of really great research and monitoring activities that are going on throughout the Gulf of Mexico, but we just don't have it all pulled together," Crosby said.

One research effort is looking at what effect the gush of oil during the spring spawning season had on fish eggs and larvae. NOAA had five research missions to look at plankton, fish and larvae. The samples are still being studied, the agency said.

It would be years before fish that were spawned this year matured, so it could be a long time before it's clear how exposure to oil in their early

life stages affected their populations.

The effects of oil on the young of one of the most prized - and heavily overfished - giant fish, the bluefin tuna, aren't known.

"There hasn't been work done in the past regarding the effects of oil and dispersant on bluefin larvae and juveniles, although some of that work is currently being started," said Andre M. Boustany, a bluefin expert at Duke University.

"While the spill didn't occur in the region of the Gulf of Mexico with the highest density of past bluefin spawning, which is farther to the west, there is definitely a spawning that occurs in the region of the spill," he said. "In addition to that, the fish that are spawned in the western Gulf have to pass through the eastern Gulf, and potentially the oil and dispersants, on their way out of the Gulf. So while the direct effects of the spill on bluefin spawning haven't been assessed, I think anyone would be hard-pressed to make the case that the effect would be positive."

Scientists also are studying the effects of the oil on the early stages of short-lived fish such as menhaden, which are prey for larger fish.

Menhaden are harvested for their oil, some of which is used in aquaculture and livestock feed. "If you eat chicken, you've eaten menhaden," Crosby said.

The effects of the spilled oil on adult fish would be different from its impact on embryos or larvae.

Petroleum hydrocarbons are an energy source for marine species. Fish don't accumulate carbon as they do mercury, said Monty Graham of the Dauphin Island Sea Lab in Alabama. Their tissue might show traces of carbon, but it also would reflect everything the fish had eaten for

months.

Graham was the lead author of a report published earlier this month in the journal *Environmental Research Letters* that found that carbon from the oil had ended up in plankton that consumed the oil-eating microbes.

Tests by NOAA and the Food and Drug Administration have shown that Gulf seafood is safe to eat. One test - a chemical analysis for dispersants - found residue in 13 of 1,735 samples of fish tissue, but none was at a level that's harmful for people.

In the warm water, it's likely that bacteria ate all the consumable parts of the oil, Graham said. The compounds that remained, such as tars and asphalts, probably dropped to the bottom, "and we may be dealing with that for a long time," he said.

Tarlike sludge is still being found in the Gulf today in sediments contaminated by the oil spill in 1979 from the blowout of Mexico's offshore well Ixtoc I.

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