

Two Years After the BP Oil Spill: IS THE GULF ECOSYSTEM COLLAPSING?

By [Washington's Blog](#)

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The Gulf Ecosystem Is Being Decimated

The BP oil spill started on April 20, 2010. We've previously [warned](#) that the BP oil spill could severely damage the Gulf ecosystem.

Since then, there are numerous signs that the worst-case scenario may be playing out:

- New York Times: "[Gulf Dolphins Exposed to Oil Are Seriously Ill, Agency Says](#)
- MSNBC: [Gulf shrimp scarce this season](#) (and see the [Herald Tribune's](#) report)
- Mother Jones: [Eyeless shrimp are being found all over the Gulf](#)
- NYT: [Oil Spill Affected Gulf Fish's Cell Function, Study Finds](#)
- CBS: [Expert: BP spill likely cause of sick Gulf fish](#) (and see [the Press Register's](#) report)
- "[Study confirms oil from Deepwater spill entered food chain](#)
- Pensacola News Journal: "[Sick fish](#)" [archive](#)
- Agence France Presse: [Mystery illnesses plague Louisiana oil spill crews](#)
- MSNBC: [Sea turtle deaths up along Gulf, joining dolphin trend](#)
- MSNBC: Exclusive: [Submarine Dive Finds Oil, Dead Sea Life at Bottom of Gulf of Mexico](#)
- AP: [BP oil spill the culprit for slow death of deep-sea coral, scientists say](#) (and see the [Guardian](#) and [AFP's](#) write ups)

- A recent report also notes that there are [flesh-eating bacteria](#) in tar balls of BP oil washing up on Gulf beaches
- And all of that lovely Corexit dispersant sprayed on water, land and air? It [inhibits the ability of microbes to break down oil, and allows oil and other chemicals to be speed past the normal barriers of human skin](#). [Background here](#).
NYT: [Impact of Gulf Spill's Underwater Dispersants Is Examined](#) Speaking on the chemical ingredients of the dispersants used, "The report finds that "Of the 57 ingredients: 5 chemicals are associated with cancer; 33 are associated with skin irritation from rashes to burns; 33 are linked to eye irritation; 11 are or are suspected of being potential respiratory toxins or irritants; 10 are suspected kidney toxins; 8 are suspected or known to be toxic to aquatic organisms; and 5 are suspected to have a moderate acute toxicity to fish."

If you still don't have a sense of the devastation to the Gulf, American reporter Dahr Jamail [lays it out](#) pretty clearly:

"The fishermen have never seen anything like this," Dr Jim Cowan told Al Jazeera. "And in my 20 years working on red snapper, looking at somewhere between 20 and 30,000 fish, I've never seen anything like this either."

Dr Cowan, with Louisiana State University's Department of Oceanography and Coastal Sciences started hearing about fish with sores and lesions from fishermen in November 2010.

Cowan's findings replicate those of others living along vast areas of the Gulf Coast that have been impacted by BP's oil and dispersants.

Gulf of Mexico fishermen, scientists and seafood processors have told Al Jazeera they are finding disturbing numbers of mutated shrimp, crab and fish that they believe are deformed by chemicals released during BP's 2010 oil disaster.

Along with collapsing fisheries, signs of malignant impact on the regional ecosystem are ominous: horribly mutated shrimp, fish with oozing sores, underdeveloped blue crabs lacking claws, eyeless crabs and shrimp - and interviewees' fingers point towards BP's oil pollution disaster as being the cause.

Eyeless shrimp

Tracy Kuhns and her husband Mike Roberts, commercial fishers from Barataria, Louisiana, are finding eyeless shrimp.

"At the height of the last white shrimp season, in September, one of our friends caught 400 pounds of these," Kuhns told Al Jazeera while showing a sample of the eyeless shrimp.

According to Kuhns, at least 50 per cent of the shrimp caught in that period in Barataria Bay, a popular shrimping area that was heavily impacted by BP's oil and dispersants, were eyeless. Kuhns added: "Disturbingly, not only do the shrimp lack eyes, they even lack eye sockets."

Eyeless shrimp, from a catch of 400 pounds of eyeless shrimp, said to be caught September 22, 2011, in Barataria Bay, Louisiana [Erika Blumenfeld/Al Jazeera]

"Some shrimpers are catching these out in the open Gulf [of Mexico]," she added, "They are also catching them in Alabama and Mississippi. We are also finding eyeless crabs, crabs with their shells soft instead of hard, full grown crabs that are one-fifth their normal size, clawless crabs, and crabs with shells that don't have their usual spikes ... they look like they've been burned off by chemicals."

On April 20, 2010, BP's Deepwater Horizon oilrig exploded, and began the release of at least 4.9 million barrels of oil. BP then used at least 1.9 million gallons of toxic Corexit dispersants to sink the oil.

Keath Ladner, a third generation seafood processor in Hancock County, Mississippi, is also disturbed by what he is seeing.

"I've seen the brown shrimp catch drop by two-thirds, and so far the white shrimp have been wiped out," Ladner told Al Jazeera. "The shrimp are immune compromised. We are finding shrimp with tumors on their heads, and are seeing this everyday."

While on a shrimp boat in Mobile Bay with Sidney Schwartz, the fourth-generation fisherman said that he had seen shrimp with defects on their gills, and "their shells missing around their gills and head".

"We've fished here all our lives and have never seen anything like this," he added.

Ladner has also seen crates of blue crabs, all of which were lacking at least one of their claws.

Darla Rooks, a lifelong fisherperson from Port Sulfur, Louisiana, told Al Jazeera she is finding crabs "with holes in their shells, shells with all the points burned off so all the spikes on their shells and claws are gone, misshapen shells, and crabs that are dying from within ... they are still alive, but you open them up and they smell like they've been dead for a week".

Rooks is also finding eyeless shrimp, shrimp with abnormal growths, female shrimp with their babies still attached to them, and shrimp with oiled gills.

"We also seeing eyeless fish, and fish lacking even eye-sockets, and fish with lesions, fish without covers over their gills, and others with large pink masses hanging off their eyes and gills."

Rooks, who grew up fishing with her parents, said she had never seen such things in these waters, and her seafood catch last year was "ten per cent what it normally is".

"I've never seen this," he said, a statement Al Jazeera heard from every scientist, fisherman, and seafood processor we spoke with about the seafood deformities.

Given that the Gulf of Mexico provides more than 40 per cent of all the seafood caught in the continental US, this phenomenon does not bode well for the region, or the country.

"The dispersants used in BP's draconian experiment contain solvents, such as petroleum distillates and 2-butoxyethanol. Solvents dissolve oil, grease, and rubber," Dr Riki Ott, a toxicologist, marine biologist and Exxon Valdez survivor told Al Jazeera. "It should be no surprise that solvents are also notoriously toxic

to people, something the medical community has long known”.

The dispersants are known to be mutagenic, a disturbing fact that could be evidenced in the seafood deformities. Shrimp, for example, have a life-cycle short enough that two to three generations have existed since BP’s disaster began, giving the chemicals time to enter the genome.

Pathways of exposure to the dispersants are inhalation, ingestion, skin, and eye contact. Health impacts can include headaches, vomiting, diarrhea, abdominal pains, chest pains, respiratory system damage, skin sensitisation, hypertension, central nervous system depression, neurotoxic effects, cardiac arrhythmia and cardiovascular damage. They are also teratogenic – able to disturb the growth and development of an embryo or fetus – and carcinogenic.

Cowan believes chemicals named polycyclic aromatic hydrocarbons (PAHs), released from BP’s submerged oil, are likely to blame for what he is finding, due to the fact that the fish with lesions he is finding are from “a wide spatial distribution that is spatially coordinated with oil from the Deepwater Horizon, both surface oil and subsurface oil. A lot of the oil that impacted Louisiana was also in subsurface plumes, and we think there is a lot of it remaining on the seafloor”.

Marine scientist Samantha Joye of the University of Georgia published results of her submarine dives around the source area of BP’s oil disaster in the *Nature Geoscience* journal.

Her evidence showed massive swathes of oil covering the seafloor, including photos of oil-covered bottom dwelling sea creatures.

While showing slides at an American Association for the Advancement of Science annual conference in Washington, Joye said: “This is Macondo oil on the bottom. These are dead organisms because of oil being deposited on their heads.”

Dr Wilma Subra, a chemist and Macarthur Fellow, has conducted tests on seafood and sediment samples along the Gulf for chemicals present in BP’s crude oil and toxic dispersants.

“Tests have shown significant levels of oil pollution in oysters and crabs along the Louisiana coastline,” Subra told Al Jazeera. “We have also found high levels of hydrocarbons in the soil and vegetation.”

According to the US Environmental Protection Agency, PAHs “are a group of semi-volatile organic compounds that are present in crude oil that has spent time in the ocean and eventually reaches shore, and can be formed when oil is burned”.

“The fish are being exposed to PAHs, and I was able to find several references that list the same symptoms in fish after the Exxon Valdez spill, as well as other lab experiments,” explained Cowan. “There was also a paper published by some LSU scientists that PAH exposure has effects on the genome.”

The University of South Florida released the results of a survey whose findings corresponded with Cowan’s: a two to five per cent infection rate in the same oil impact areas, and not just with red snapper, but with more than 20 species of fish with lesions. In many locations, 20 per cent of the fish had lesions, and later sampling expeditions found areas where, alarmingly, 50 per cent of the fish had them.

“I asked a NOAA [National Oceanic and Atmospheric Administration] sampler

what percentage of fish they find with sores prior to 2010, and it's one tenth of one percent," Cowan said. "Which is what we found prior to 2010 as well. But nothing like we've seen with these secondary infections and at this high of rate since the spill."

"What we think is that it's attributable to chronic exposure to PAHs released in the process of weathering of oil on the seafloor," Cowan said. "There's no other thing we can use to explain this phenomenon. We've never seen anything like this before."

Crustacean biologist Darryl Felder, in the Department of Biology with the University of Louisiana at Lafayette is in a unique position.

Felder has been monitoring the vicinity of BP's blowout Macondo well both before and after the oil disaster began, because, as he told Al Jazeera, "the National Science Foundation was interested in these areas that are vulnerable due to all the drilling".

"So we have before and after samples to compare to," he added. "We have found seafood with lesions, missing appendages, and other abnormalities."

Felder also has samples of inshore crabs with lesions. "Right here in Grand Isle we see lesions that are eroding down through their shell. We just got these samples last Thursday and are studying them now, because we have no idea what else to link this to as far as a natural event."

According to Felder, there is an even higher incidence of shell disease with crabs in deeper waters.

"My fear is that these prior incidents of lesions might be traceable to microbes, and my questions are, did we alter microbial populations in the vicinity of the well by introducing this massive amount of petroleum and in so doing cause microbes to attack things other than oil?"

One hypothesis he has is that the waxy coatings around crab shells are being impaired by anthropogenic chemicals or microbes resulting from such chemicals.

"You create a site where a lesion can occur, and microbes attack. We see them with big black lesions, around where their appendages fall off, and all that is left is a big black ring."

Felder added that his team is continuing to document the incidents: "And from what we can tell, there is a far higher incidence we're finding after the spill."

"We are also seeing much lower diversity of crustaceans," he said. "We don't have the same number of species as we did before [the spill]."

Felder is also finding "odd staining" of animals that burrow into the mud that cause stain rings, and said: "It is consistently mineral deposits, possibly from microbial populations in [overly] high concentrations."

Dr Andrew Whitehead, an associate professor of biology at Louisiana State University, co-authored the report Genomic and physiological footprint of the

Deepwater Horizon oil spill on resident marsh fishes that was published in the journal Proceedings of the National Academy of Sciences in October 2011.

Whitehead's work is of critical importance, as it shows a direct link between BP's oil and the negative impacts on the Gulf's food web evidenced by studies on killifish before, during and after the oil disaster.

"What we found is a very clear, genome-wide signal, a very clear signal of exposure to the toxic components of oil that coincided with the timing and the locations of the oil," Whitehead told Al Jazeera during an interview in his lab.

According to Whitehead, the killifish is an important indicator species because they are the most abundant fish in the marshes, and are known to be the most important forage animal in their communities.

"That means that most of the large fish that we like to eat and that these are important fisheries for, actually feed on the killifish," he explained. "So if there were to be a big impact on those animals, then there would probably be a cascading effect throughout the food web. I can't think of a worse animal to knock out of the food chain than the killifish."

But we may well be witnessing the beginnings of this worst-case scenario.

Whitehead is predicting that there could be reproductive impacts on the fish, and since the killifish is a "keystone" species in the food web of the marsh, "Impacts on those species are more than likely going to propagate out and effect other species. What this shows is a very direct link from exposure to DWH oil and a clear biological effect. And a clear biological effect that could translate to population level long-term consequences."

Ed Cake, a biological oceanographer, as well as a marine and oyster biologist, has "great concern" about the hundreds of dolphin deaths he has seen in the region since BP's disaster began, which he feels are likely directly related to the BP oil disaster.

"Adult dolphins' systems are picking up whatever is in the system out there, and we know the oil is out there and working its way up the food chain through the food web – and dolphins are at the top of that food chain."

Cake explained: "The chemicals then move into their lipids, fat, and then when they are pregnant, their young rely on this fat, and so it's no wonder dolphins are having developmental issues and still births."

Cake, who lives in Mississippi, added: "It has been more than 33 years since the 1979 Ixtoc-1 oil disaster in Mexico's Bay of Campeche, and the oysters, clams, and mangrove forests have still not recovered in their oiled habitats in seaside estuaries of the Yucatan Peninsula. It has been 23 years since the 1989 Exxon Valdez oil disaster in Alaska, and the herring fishery that failed in the wake of that disaster has still not returned."

Cake believes we are still in the short-term impact stage of BP's oil disaster.

"I will not be alive to see the Gulf of Mexico recover," said Cake, who is 72 years old. "Without funding and serious commitment, these things will not come back to pre-April 2010 levels for decades."

"We're continuing to pull up oil in our nets," Rooks said. "Think about losing everything that makes you happy, because that is exactly what happens when someone spills oil and sprays dispersants on it. People who live here know better than to swim in or eat what comes out of our waters."

Khuns and her husband told Al Jazeera that fishermen continue to regularly find tar balls in their crab traps, and hundreds of pounds of tar balls continue to be found on beaches across the region on a daily basis.

Meanwhile Cowan continues his work, and remains concerned about what he is finding.

"We've also seen a decrease in biodiversity in fisheries in certain areas. We believe we are now seeing another outbreak of incidence increasing, and this makes sense, since waters are starting to warm again, so bacterial infections are really starting to take off again. We think this is a problem that will persist for as long as the oil is stored on the seafloor."

Did the BP Spill Ever Really Stop?

We've repeatedly documented that BP's gulf Mocando well is [still leaking](#).

Stuart Smith – a successful trial lawyer who won a billion dollar verdict against Exxon Mobil – [noted](#) recently:

New sampling data from the nonprofit Louisiana Environmental Action Network (LEAN) provide confirmation that not only is BP's oil still very much present in the water in Bayou La Batre, but that it still exists in a highly toxic state nearly two years after the spill.

Here are photos of brown oily foam washing ashore in Bayou La Batre (just west of Mobile Bay) on February 27, 2012:



Photo credit to the Louisiana Environmental Action Network (LEAN)

Water samples were taken by Dennis and Lori Bosarge, LEAN members from Coden, Alabama. The lab-certified test results are in (see full lab report at bottom), and they are startling in that they suggest that oil is still leaking from the Macondo reservoir – most likely from cracks and fissures in the seafloor around the plugged wellhead. Scientists believe the cracks were caused by BP's heavy-handed "kill" efforts.

Despite numerous opportunities to do so, the U.S. Coast Guard has never publicly denied that the Macondo field is still leaking. And these latest sampling results out of Bayou La Batre provide damning new evidence that the BP oil spill never really ended.

Government Sits On Its Hands ...

The New York Times [notes](#) today:

Congress's response to the spill has been truly pathetic. It has not passed a single bill to prevent another catastrophe, according to [a report](#) issued Tuesday by former members of a presidential commission that investigated the spill. Congress has failed even to codify the Interior Department's sound

regulatory reforms, which could be undone by a future administration.

The administration has developed new standards for each stage of the drilling process — from rig design to spill response — insisting that operators fully prepare for worst-case scenarios. But the commissioners' report notes that the new equipment systems have not yet been tested in deep-water conditions.

Indeed, Mother Jones notes that the [White House pressured scientists to underestimate BP spill size](#). And see this [Forbes write up](#), and our [previous reporting](#) on the topic.

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