

# Deepwater mystery: Oil loose in the Gulf

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In this May 27, 2010 file photo, Douglas Brown, a Transocean, Ltd. employee and survivor of the Deep Horizon explosion, testifies on Capitol Hill in Washington. The impatient nation isn't getting answers fast enough in the Gulf of Mexico oil spill disaster. What exactly went wrong? Who messed up? How much oil is actually pouring into the Gulf? Can the oil get to Florida and even up the Atlantic coast? What will the environmental and economic consequences be? (AP Photo/Cliff Owen, File)

(AP) -- Streaming video of oil pouring from the seafloor and images of dead, crude-soaked birds serve as visual bookends to the natural calamity unfolding in the Gulf of Mexico.

But independent scientists and government officials say another disaster is playing out in slow motion - and out of public view - in the mysterious depths between the gusher and the coast, a world inhabited by [sperm whales](#), gigantic jellyfish and diminutive plankton.

More than a month after the BP PLC spill began, the disaster's dimensions have come into sharper focus with government estimates that more than 18 million gallons of oil - and possibly 39 million gallons - has already poured from the leaking well, eclipsing the 11 million gallons released during the [Exxon Valdez spill](#).

"Every fish and invertebrate contacting the oil is probably dying. I have no doubt about that," said Prosanta Chakrabarty, a Louisiana State University fish biologist.

The deep Gulf is an area where light can't penetrate and researchers rarely venture.

Yet what happens there can ripple across the food chain. Every night the denizens of the deep make forays to shallower depths to eat - and be eaten by - other fish, according to marine scientists who describe it as the largest migration on earth.

In turn, several species closest to the surface - including red snapper, shrimp and menhaden - help drive the Gulf Coast [fishing industry](#). Others such as marlin, cobia and [yellowfin tuna](#) sit atop the food chain and are chased by the Gulf's charter fishing fleet.

Many of those species are now in their annual spawning seasons. Eggs exposed to oil would quickly perish. Those that survived to hatch could starve if the plankton at the base of the food chain suffer. Larger fish are more resilient, but not immune to the toxic effects of oil.

The Gulf's largest spill was in 1979, when the Ixtoc I platform off Mexico's Yucatan peninsula blew up and released 140 million gallons of oil. But that was in relatively shallow waters - about 160 feet deep - and much of the oil stayed on the surface where it broke down and became less toxic by the time it reached the Texas coast.

Since BP's Deepwater Horizon exploded and sank more than five weeks ago, scientists said they have found at least two sprawling underwater plumes of what appears to be oil, each hundreds of feet deep and stretching for miles.

A plume reported last week by a team from the University of South Florida, was headed toward the continental shelf off the Alabama coastline, waters thick with fish and other marine life.

On Sunday, BP's CEO Tony Hayward disputed the existence of the plumes, saying testing by the company showed no evidence that oil was being suspended in large masses underwater. Hayward said oil's natural tendency is to rise to the surface, and any oil found underwater was in the process of working its way up.

However, the researchers said oil in the plumes had dissolved into the water, possibly a result of chemical dispersants used to break up the spill. That makes it more dangerous to fish larvae and creatures that are filter feeders.

Responding to Hayward's assertion, one researcher noted that scientists from several different universities have come to similar conclusions about the plumes after doing separate testing.

No major fish kills have yet been reported, but federal officials said the impacts could take years to unfold.

"This is just a giant experiment going on and we're trying to understand scientifically what this means," said Roger Helm, a senior official with the U.S. Fish and Wildlife Service.

In 2009, LSU's Chakrabarty discovered two new species of bottom-dwelling pancake batfish about 30 miles off the Louisiana coastline -

right in line with the pathway of the spill caused when the Deepwater Horizon burned and sank April 24.

By the time an article in the Journal of Fish Biology detailing the discovery appears in the August edition, Chakrabarty said, the two species - which pull themselves along the seafloor with feet-like fins - could be gone or in serious decline.

"There are species out there that haven't been described, and they're going to disappear," he said.

Recent discoveries of endangered sea turtles soaked in oil and 22 dolphins found dead in the spill zone only hint at the scope of a potential calamity that could last years and unravel the Gulf's food web.

Concerns about damage to the fishery already is turning away potential customers for charter boat captains such as Troy Wetzel of Venice. To get to waters unaffected by the spill, Wetzel said he would have to take his boat 100 miles or more into the Gulf - jacking up his fuel costs to where only the wealthiest clients could afford to go fishing.

Significant amounts of crude oil seep naturally from thousands of small rifts in the Gulf's floor - as much as two Exxon Valdez's every year, according to a 2000 report from government and academic researchers. Microbes that live in the water break down the oil.

The number of microbes that grow in response to the more concentrated BP spill could tip that system out of balance, LSU oceanographer Mark Benfield said.

Too many microbes in the sea could suck oxygen from the water, creating an uninhabitable hypoxic area, or dead zone.

Preliminary evidence of increased hypoxia in the Gulf was seen during an early May cruise aboard the R/V Pelican, carrying researchers from the University of Georgia, the University of Mississippi and the University of Southern Mississippi.

An estimated 910,000 gallons of dispersants - enough to fill more than 100 tanker trucks - are contributing a new toxin to the mix. Containing petroleum distillates and propylene glycol, the dispersants' effects on marine life are still unknown.

What is known is that by breaking down oil into smaller droplets, dispersants reduce the oil's buoyancy, slowing or stalling the crude's rise to the surface and making it harder to track the spill.

Dispersing the oil lower into the water column protects beaches, but also keeps it in cooler waters where oil does not break down as fast. That could prolong the oil's potential to poison fish, said Larry McKinney, director of the Harte Research Institute at Texas A&M University-Corpus Christi.

"There's a school of thought that says we've made it worse because of the dispersants," he said.

There have been dire reports of a powerful surface current, the loop current, carrying [oil](#) toward Florida. The current is one of the better understood dynamics at work in the Gulf, yet even those predictions are subject to debate.

Figuring out what is happening farther down in the water column gets even trickier.

The Gulf sprawls across 600,000 square miles and reaches more than 14,000 feet at its deepest point.

At different depths, currents pull in different directions at varying speeds. National Oceanic and Atmospheric Administration monitoring at the site of BP's Deepwater Horizon spill shows that on any given day water at different depths moves in dozens of directions.

Scientists who study the Gulf said their efforts to track the spill had been hobbled by a shortage of research vessels.

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