

# Scientists think Gulf can recover

Seth Borenstein and Cain Burdeau, Associated Press, 8-6-10

BAY ST. LOUIS, Miss.—Want to know the future of the oil-stained Gulf of Mexico ecosystem? Look first to its muddy, polluted past.

The recent ecological history of the Gulf gives scientists reason for hope. In an extensive survey of Gulf of Mexico researchers by The Associated Press, at least 10 of them separately volunteered the same word to describe the body of water: "resilient."

This is buttressed by a government report that claims that all but 53 million gallons of the leaked oil from BP's Deepwater Horizon well are gone. The report issued Wednesday says the cleanup extracted a lot of it, but the natural processes that break up, evaporate and dissolve oil took care of 84 million gallons—more than twice the amount human efforts removed.

At the same time, more progress was made in sealing the well for good as BP finished pumping cement into it on Thursday.

The Gulf's impressive self-cleanup makes sense given its history and makeup. The Gulf regularly absorbs environmental insults: overfishing, trawlers raking sea floors, frequent hurricanes. And then there's the dead zone, an area starved of oxygen because 40 percent of America's runoff pours from the Mississippi River into the Gulf.

And yet the Gulf remains America's most biologically diverse place, with 15,419 species. It is the nation's buffet of life as well as its gas station and septic tank.

It's too soon to know the full effects of the BP disaster. But to get a sense of where the Gulf has been and where it's going, the AP surveyed 75 scientists about the health of the Gulf of Mexico before the spill. On a 0-to-100 scale, the scientists graded its general health a 71 on average. That's a respectable C, considering 100 would be considered pristine and untouched by civilization.

"If having a strong system in place pre-spill makes a difference, and I think it might, then I think the system may bounce back sooner than expected," said Brian Crother, a Southeastern Louisiana University wetlands biologist.

But nothing about the Gulf is simple. Just as often as scientists use the word "resilient," they use the word "stress."

"The Gulf of Mexico has been fairly resilient, but it's been under stress," Michael Carron, director of the Northern Gulf Institute, said as he steered his boat around the Bay St. Louis waters.

In the survey, which was sent to scientists through several research institutions and scientific societies, sea turtles, manatees, wetlands and water quality hovered around or below the failing point. Doing well were beaches and birds, including the once-endangered brown pelican, Louisiana's state bird.

While others are optimistic, Jeremy Jackson, director of the Center for Marine Biodiversity and Conservation at the Scripps Institution of Oceanography, is worried.

"You have an ecosystem that's already severely stressed, then you add this major disturbance," he said. "We're going to pay for our sins double-time because we've neglected the environment of the northern Gulf so badly for so long."

Yet the Gulf's water is warm, which is good for microbes that eat oil. The currents and drainage are right to flush and dilute tainted water. And the Gulf has long been exposed to natural gas, oil and a host of other contaminants.

While BP's well dumped 172 million gallons into the Gulf over three months, the muddy Mississippi brings in 198 million gallons of water—replete with urban and farm runoff—every minute. The National Research Council estimates that 41 million gallons a year of oil naturally seep into the Gulf from below.

A thriving microbial ecosystem has developed to consume the oil.

"The Gulf has been immunized many times by environmental insults," said Larry McKinney, director of a Gulf research center at Texas A&M University Corpus Christi. "Because of that resilience we see here—and not in other places—it also may be the best place" to cope with a gigantic spill.

It's still early in damage assessments, but so far about 600 miles of coast has been fouled with oil. The official government death toll so far: 3,606 birds, 508 endangered sea turtles and 67 marine mammals. More than 2,100 birds, turtles and marine mammals have been found oiled, but alive.

But those are only the losses seen. Scientists suspect many more animals have died, but their bodies have not been found.

Federal and BP officials are scurrying to conduct damage assessments from the spill. The first and crucial step to such assessments is figuring out the condition of the Gulf before the spill. It's also key in calculating just how much BP will have to pay.

"A baseline is the medical history of the environment," said Smithsonian scientist Nancy Knowlton. "Without a baseline you can't say anything about what the impact of anything is."

What makes the Gulf so rich in marine life is what surrounds the Gulf: river wetlands. And yet those wetlands are among the most troubled aspects of the Gulf, ranking an unhealthy 65 on the AP survey.

For the past century, Louisiana's wetlands have been chopped of cypress and tupelo, drained for farms and split by oil canals. On average, Louisiana loses about 25 to 35 square miles a year of wetlands.

Another worsening problem, the dead zone, starts with the farms of the Midwest and fertilizer runoff that carries too much nitrogen. It goes into the Mississippi and then into the Gulf. That heavy dose of nitrogen every summer encourages algae to grow, which results in a huge feast for bacteria that use up oxygen there, leaving little for fish or anything else.

"It's getting bigger over the years, and it's extending more into Texas," said Nancy Rabalais, director of the Louisiana Universities Marine Consortium.

This year's Dead Zone is the size of Massachusetts, not quite as large as the biggest ever, which was in 2002.

"Organisms are resilient," said John Dindo of the Dauphin Island Sea Lab. "Habitats are not. Habitats do not bounce back as fast as organisms."

The Gulf of Mexico averages three times more species per square mile than the seas around Hawaii, according to the Census of Marine Life.

Among those creatures are shrimp, which are still plentiful in the Gulf and have not shown any early signs of oil damage.

"The reputation of (the Gulf) being a sportsman's paradise is not far off the mark," said Rusty Gaude of Louisiana State University's agricultural center. If anyone living along the Gulf coast goes hungry, "it is his own fault," he jokes.

Twenty-nine Gulf species are on the endangered list, and nine others are on the threatened list. They include five species of sea turtles. Scientists in the AP survey ranked sea turtles as among the species struggling most in the Gulf.

After a cold winter that killed hundreds of turtles in Florida, the BP spill hit at the worst time and place for sea turtles both young and old, said Karen Bjorndal of the University of Florida. That's because the young turtles often are caught up in the parts of the water where the oil is and can't easily escape, while the older turtles that spend more time under water get covered with oil when they come up for air, she said.

The most vulnerable species of sea turtle is the loggerhead, and its nests have drastically declined in recent years, but scientists don't know why. There are loggerheads around the world, but the oil spill could drive the Florida or Alabama populations to zero, Bjorndal said.

As for delicate and threatened coral, coral in the Florida Keys is on the decline, while the Flower Garden Banks coral in deep waters off the coast of Texas is far healthier than most of the world's reefs, said C. Mark Eakin, who runs the federal government's coral reef watch.

Ocean scientist and explorer Sylvia Earle said one key indicator of the health of the Gulf is the bluefin tuna. It has been in trouble worldwide from overfishing, and the Gulf is one of its two primary spawning grounds. Because of its timing, the spill could devastate this year's spawn of bluefin, NOAA chief Jane Lubchenco said Wednesday.

Other fish species that during the 20th century were overfished and dropping to near dangerous levels have started to come back, such as king mackerel and red snapper, said Clay Porch, director of sustainable fisheries for NOAA's Southeast division.

The lasting image of the spill has been oiled birds. Yet, overall, birds along the Gulf are in good shape, earning a seemingly robust grade of 76 from scientists in the survey.

"There are still lots of healthy birds there," said Marc Dantzker, a Cornell University ornithologist. "At this point the system has a good chance of a strong recovery."

An analogy that many of the experts said is apt for the entire Gulf is one of a champion boxer who takes devastating hits.

The Gulf "keeps getting knocked down. You can only get knocked down so many times before you don't get back up," Texas A&M's McKinney said. "The Gulf has gotten knocked down many, many times. You've got dead zones, habitat loss, you've got overfishing. You've got hurricanes keep coming. At what point do you get the tipping point?"