

# Right after an asteroid killed the dinosaurs, life returned to the scene of the crime

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By [Sarah Kaplan](#) December 13, 2016

Some 66 million years ago, a giant space rock smashed into the Gulf of Mexico and brought the age of the dinosaurs — along with 75 percent of all organisms on Earth — to an abrupt and fiery end. Tsunamis roiled the oceans, superhot shrapnel from the impact rained down from the skies, dust swirled into the atmosphere and blocked the sun, and minerals from the asteroid turned the surrounding water toxic.

But life wouldn't stay away for long.

Scientists drilling into the site where the asteroid struck found evidence of microscopic organisms in the layers of rock that were deposited in the days, months and years after the impact. Within the geological blink of an eye of one of the worst mass extinctions in Earth's history, two hardy “disaster species,” called *Braarudosphaera* and *Thoracosphaera*, had returned to the scene of the crime.

“It's a sign of life in the surface ocean right after the mass extinction,” said [Timothy Bralower](#), a paleoceanographer at Pennsylvania State University. “It certainly wasn't sterile.”

The finding, presented Monday at the [American Geophysical Union fall meeting](#), is the latest result from the [Chicxulub drilling program](#) — an effort to drill more than 2,000 feet into Chicxulub crater, which was left behind when the asteroid hit.

Last month, the team published a paper in the journal *Science* describing jumbles of “shocked” granite rocks from deep in the crust that had been pushed upward by the impact. The finding helped validate their models about how rocks that were displaced during the asteroid strike collapsed into a mountainous “peak ring” around the center of the crater — a phenomenon seen on other bodies in the solar system but never before found on Earth. It also let them figure out how powerful the impact was: It had roughly the same energy as 100 million atomic bombs.

Unlike that research, the finding about the organisms in the crater has not yet been published in a peer reviewed scientific journal (though Bralower hinted there will be more studies coming soon).

The investigation into the life that survived — and even thrived — at ground zero for the mass extinction could help scientists illuminate one of the darkest times in Earth's history.

Bralower explained that there are three main theories about what factors made the asteroid impact so deadly. One is darkness: Dust from the cataclysm could have spread throughout the atmosphere, blocking out the sun and killing anything that relied on its light. This explanation is problematic because it's unlikely that the effect would last very long. “You can stop photosynthesis for days and weeks, it's really hard to stop it for 1,000 years,” he said.

Another is ocean acidification caused by a sudden influx of carbon dioxide released after the impact. “But the dilemma you have is it dissolves all the evidence that you're primarily looking for,” Bralower said, noting that the calcium carbonate shells of many marine organisms are dissolved by acidic water.

Then there are the toxic metals expelled by the impactor — things like nickel and iridium that make the ocean a distinctly unpleasant place to be. These will be easiest to test for in the cores taken from the site.

Bralower and his team spent two months on a rig in the Gulf of Mexico, extracting long tubes of rock from the crater's “peak ring.” The samples were then sent to a lab in Germany, where they were examined for clues about the environment in the wake of the cataclysm.

The cores divided into easily identifiable segments. The first layer of rock came from the seconds after the impact. Then came a calcium carbonate-rich “settling layer,” which captured the days and years that followed. This is the layer where Bralower and his colleagues found the two “disaster species.” (These are actually genera, but “disaster species” rolls off the tongue more easily, Bralower said.)

The scientists will search for other living things in this layer, but it's not clear how much they'll find. *Braarudosphaera* and *Thoracosphaera* are incredibly resilient; they still dwell in the most stressful environments in today's world.

Whether they find other creatures — and where they find them in the rock record — could indicate what factors had a role in the extinctions, and when their effects started to fade.

Beyond the devastation to life, which was admittedly pretty bad, the crater will also reveal just what happens when a huge space rock slams into the Earth. Chicxulub is one of the best preserved impact craters on Earth, noted Bralower's colleague Philippe Claeys, a geologist at the Free University of Brussels.

“To me the exceptional story is that this material is preserved, this extended sequence [of rock layers] is showing us exactly what happened at the impact,” he said. “It was very bad luck for the dinosaurs. But it is good luck for us.”

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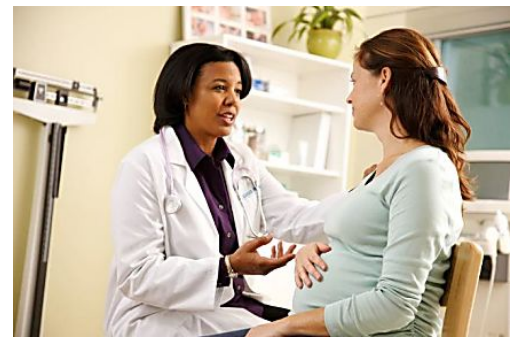
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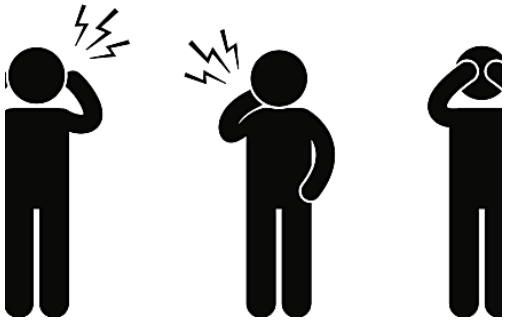
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