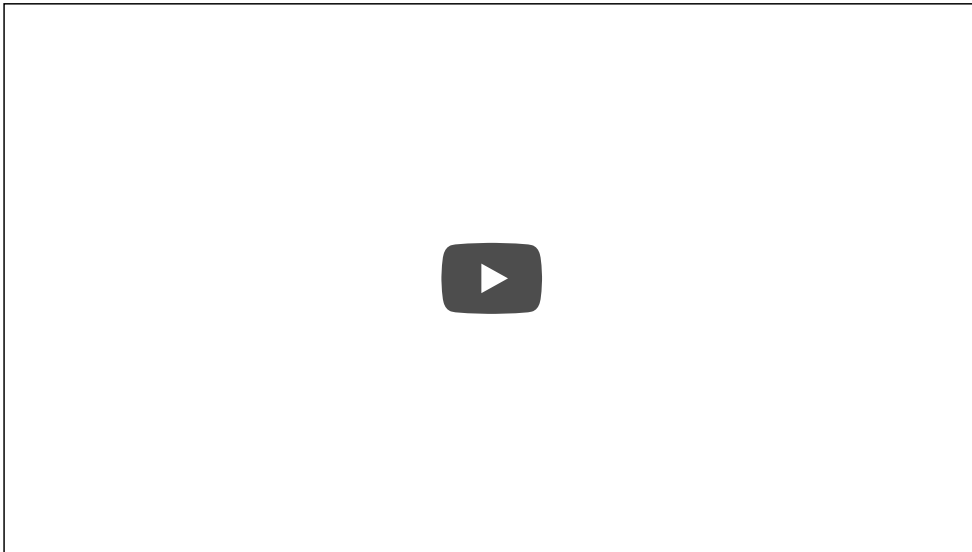


Clues to a mass extinction found behind New Jersey shopping mall

BY MEGAN HAMILTON JAN 11, 2016 IN SCIENCE

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Mantua - It looks like a typical rock quarry behind a shopping mall just 15 miles away from Philadelphia, but it contains a trove of 66-million-year-old fossils that may provide evidence that the dinosaurs became extinct as a result of a massive meteor strike.



During this time period, the Inversand quarry in Mantua Township was at the bottom of the sea, and this area is now studded with thousands of fossils, **Mental_Floss** reports. A six-inch layer of soil 40 feet below ground provides

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Rowan University Paleontologist **Kenneth Lacovara** hopes to prove this hypothesis, but finding the fossil evidence has proved challenging. But this thin layer of sediment contains masses of intact skeletal remains, and many of the larger skeletons are reasonably intact. This suggests the animals died all at once — the potential hallmark of a mass extinction. And the fossils date back to about the same period as the impact of the meteor that struck what is now Mexico's Yucatan Peninsula.

This layer, Lacovara said, is part of a "mass death assemblage." He believes this huge collection of fossils may date from the mass extinction itself, **The Hamilton Spectator** reports.

Inversand quarry is located behind a Lowe's home improvement store, but 66 million years ago, sea levels were higher, and this location in southern New Jersey was part of a shallow sea that lay 10 to 15 miles offshore from an ancient mountain range that rose out of the water, the **Spectator** reports.

The university is completing the process of purchasing the quarry this month, and along with Lacovara, has sent out graduate students who meticulously catalogue the fossils while explaining a bit about the fossils they find to inquisitive members of the public, **The New York Times** reports.

And there's lots of other eager fossil hunters here as well. The quarry has been opened to the public one day a year for the past four years, and amateur paleontologists arrive in droves. Some 1,500 attended the event last fall.

The novice paleontologists can keep the fossils they find, and there's plenty to go around, the **Times** reports. The majority of the creatures who met their deaths here were clams and oysters, but there's also fossils of crocodiles, sea turtles, and **mosasaurs**, ferocious predatory lizards that were equipped with rows of teeth that pointed towards the gullet, making it impossible for any prey that the huge creatures swallowed to ever struggle out.

The 65-acre quarry was once the source of marl, a water treatment product, but it shut down, a victim of the 2007 recession. In September, the university agreed to pay \$1.95 million to purchase the site, and it is in the process of being turned into a citizen science lab, and the area will be preserved for future scientific research, **Mental_Floss** reports.

Although Lacovara doesn't quite yet have enough evidence to prove the mass extinction hypothesis, the huge collection of fossils from 66 million years ago provides scientists with the chance to gain a better understanding of what was going on at the time.

And the dating of this fossil layer places it within reach of the fateful meteor impact that sparked the climatic disaster that wiped out three-quarters of the



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This is the riddle of mass extinctions — scientists frequently don't find the remains of any of the billions of animals that perished all at once. Worldwide, the fossils of the last dinosaurs are usually found well below the extinction layer. That layer is marked by iridium, an element that's concentrated in asteroids and comets.

But this discovery in Mantua seemingly flies in the face of that, with the very thing scores of paleontologists would love to find — a 66-million-year-old mass death assemblage.

"It sounds silly, but is it the case that this pit in South Jersey, behind Lowe's, has the one window into this pivotal moment in time?" Lacovara wondered.

It's a window that might have been permanently shut.

A redevelopment plan called for filling up the hole and constructing a shopping center and apartments on top. But Lacovara had other ideas and proposed that the quarry be preserved, both as a dig site for paleontologists, and as a museum that could inspire children, the Spectator reports.

Inversand was enthusiastic about the idea, and bulldozers cleared a section of the pit so that the paleontologist and his students could excavate fossils. That's when they discovered the mass death assemblage.

Although city officials wanted to purchase the quarry, they didn't have the \$2 million that the 26-hectare site would cost.

The company was funneling several hundred thousand dollars each year into keeping pumps running to divert water that would otherwise flow in, and an application for a state grant was in limbo. So last summer company officials informed Lacovara that at the end of the year the pumps would be turned off.

That would have turned the quarry into a lake by the middle of January, Lacovara noted.

But the university saved the day.

Lacovara had recently shipped the skeleton of the immense dinosaur **Dreadnoughtus** (which he discovered) back to Argentina during the last part of 2014. Then he met with Ali A. Houshmand, president of the university, who said he wanted to create a school of the Earth and environment, and Lacovara would be the founding dean.

The most important part of the deal for Lacovara was for Rowan University to purchase the quarry. Houshmand agreed, the Spectator reports.

Now the future of Inversand quarry was safe.

Lacovara hopes to see more fossil days and school trips, along with a visitors center overlooking the pit.



He's hoping something like this will teach kids how to decipher the mysteries of the world.

Lacovara is a little bit cautious when talking about whether this fossil graveyard is a link to the mass extinction, noting he doesn't have convincing evidence yet.

He and others are in the process of trying to find weaknesses in the hypothesis.

"There's going to be so many arrows aimed at that," he said.

But the rocks are near that time, he said. He knows the estimates are close. That makes the hypothesis worthwhile.

Note: If you want to know more about the [Western Interior Seaway](#) and the mosasaurs that inhabited them, check out the video above.

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