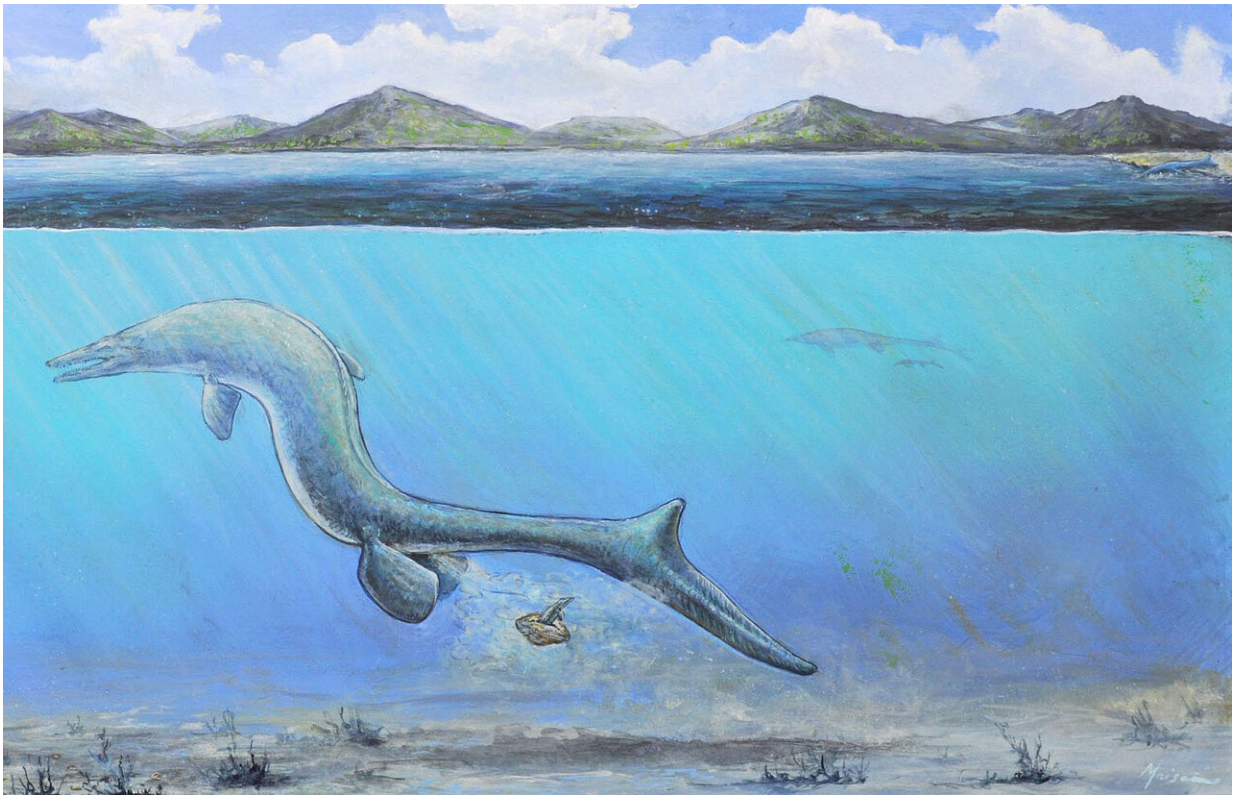


First egg from Antarctica is big and might belong to an extinct sea lizard

June 17 2020



An artist's interpretation of a baby mosasaur emerging from an egg just moments after it was laid. The scene is set in the shallow waters of Late Cretaceous Antarctica. In the background, mountains are covered in vegetation due to a warm climate. In the upper right, an alternative hypothesis for egg laying is depicted, with the mosasaur laying an egg on the beach. Credit: John Maisano/The University of Texas at Austin Jackson School of Geosciences

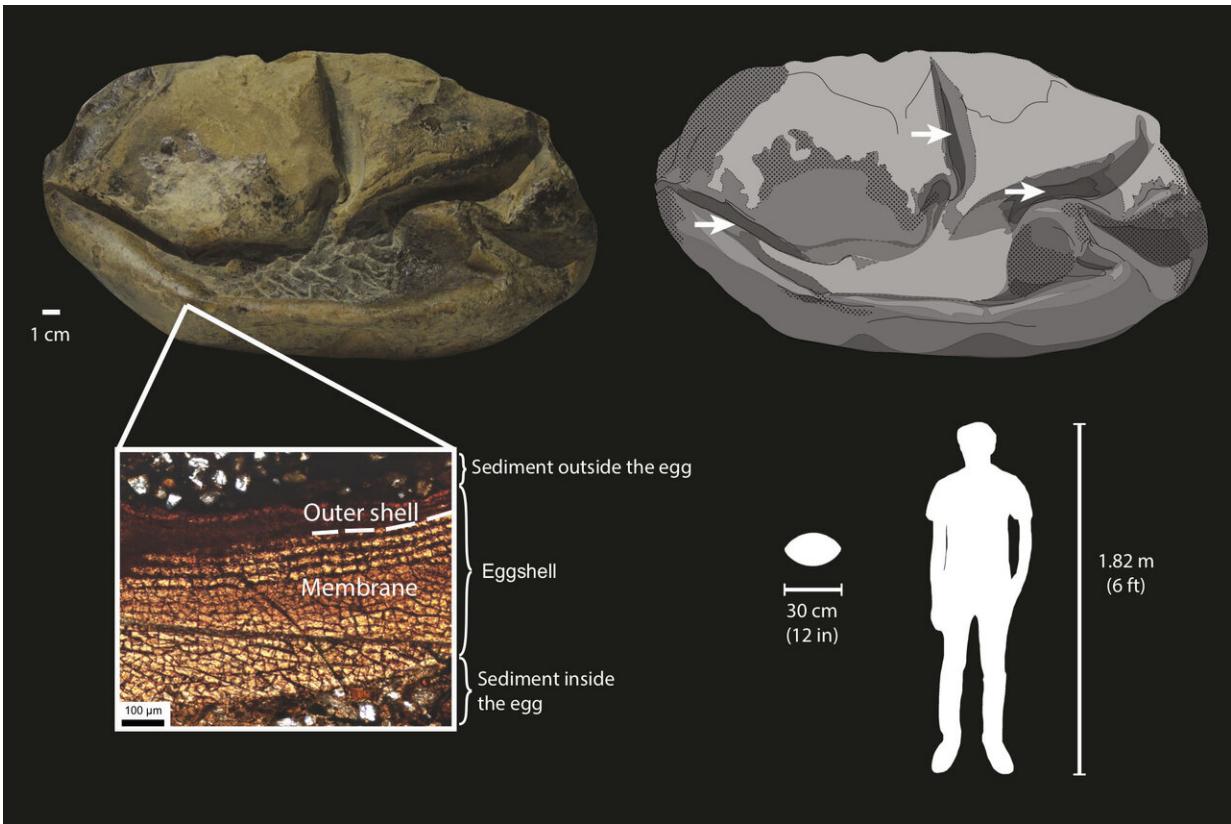
In 2011, Chilean scientists discovered a mysterious fossil in Antarctica that looked like a deflated football. For nearly a decade, the specimen sat unlabeled and unstudied in the collections of Chile's National Museum of Natural History, with scientists identifying it only by its sci-fi movie-inspired nickname—"The Thing."

An analysis led by researchers at The University of Texas at Austin has found that the fossil is a giant, soft-shell egg from about 66 million years ago. Measuring in at more than 11 by 7 inches, the egg is the largest soft-shell egg ever discovered and the second-largest egg of any known animal.

The specimen is the first fossil egg found in Antarctica and pushes the limits of how big scientists thought soft-shell eggs could grow. Aside from its astounding size, the fossil is significant because scientists think it was laid by an extinct, giant marine [reptile](#), such as a mosasaur—a discovery that challenges the prevailing thought that such creatures did not lay eggs.

"It is from an animal the size of a large dinosaur, but it is completely unlike a dinosaur egg," said lead author Lucas Legendre, a postdoctoral researcher at UT Austin's Jackson School of Geosciences. "It is most similar to the eggs of lizards and snakes, but it is from a truly giant relative of these animals."

A study describing the fossil egg was published in *Nature* on June 17.



A diagram showing the fossil egg, its parts and relative size. The giant egg has a soft shell. This is shown in dark gray in the drawing, with arrows pointing to its folds and surrounding sediment shown as light gray. The cross section (lower left insert) shows that the egg consists mostly of a soft membrane surrounded by a very thin outer shell. Silhouettes on the lower right show the size of the egg relative to an adult human. Credit: Legendre et al. (2020)

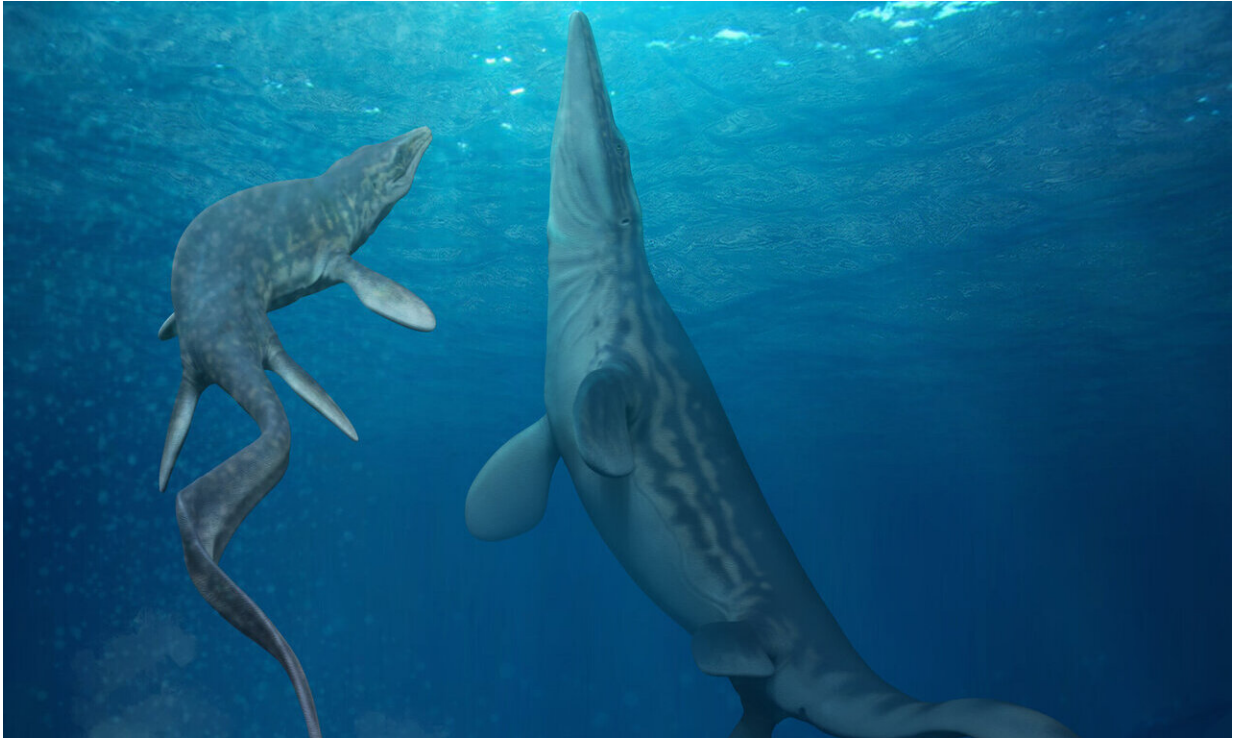
Co-author David Rubilar-Rogers of Chile's National Museum of Natural History was one of the scientists who discovered the fossil in 2011. He showed it to every geologist who came to the museum, hoping somebody had an idea, but he didn't find anyone until Julia Clarke, a professor in the Jackson School's Department of Geological Sciences, visited in 2018.

"I showed it to her and, after a few minutes, Julia told me it could be a deflated egg!" Rubilar-Rogers said.

Using a suite of microscopes to study samples, Legendre found several layers of membrane that confirmed that the fossil was indeed an egg. The structure is very similar to [transparent, quick-hatching eggs](#) laid by some snakes and lizards today, he said. However, because the fossil egg is hatched and contains no skeleton, Legendre had to use other means to zero in on the type of reptile that laid it.

He compiled a data set to compare the [body size](#) of 259 living reptiles to the size of their eggs, and he found that the reptile that laid the egg would have been more than 20 feet long from the tip of its snout to the end of its body, not counting a tail. In both size and living reptile relations, an ancient marine reptile fits the bill.

Adding to that evidence, the rock formation where the egg was discovered also hosts skeletons from baby mosasaurs and plesiosaurs, along with adult specimens.



An artist's interpretation of a baby mosasaur hatching from an egg in the Antarctic sea. The mother is visible in the background. The egg is on the sea floor. Credit: Francisco Hueichaleo, 2020.

"Many authors have hypothesized that this was sort of a nursery site with shallow protected water, a cove environment where the young ones would have had a quiet setting to grow up," Legendre said.

The paper does not discuss how the ancient reptile might have laid the eggs. But the researchers have two competing ideas.

One involves the egg hatching in the open water, which is how some species of sea snakes give birth. The other involves the reptile depositing the eggs on a beach and hatchlings scuttling into the ocean like baby sea turtles. The researchers say that this approach would depend on some

fancy maneuvering by the mother because giant marine reptiles were too heavy to support their body weight on land. Laying the [eggs](#) would require the reptile to wriggle its tail on shore while staying mostly submerged, and supported, by water.

"We can't exclude the idea that they shoved their tail end up on shore because nothing like this has ever been discovered," Clarke said.

More information: A giant soft-shelled egg from the Late Cretaceous of Antarctica, *Nature* (2020). [DOI: 10.1038/s41586-020-2377-7](https://doi.org/10.1038/s41586-020-2377-7) , www.nature.com/articles/s41586-020-2377-7

Provided by University of Texas at Austin

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