

Pterosaur hatchlings needed their parents, trove of eggs reveals (Update)

November 30 2017



Hundreds of pterosaur bones lying on the surface, demonstrating the richness of these sites. Credit: Alexander Kellner (Museu Nacional/UFRJ)

The largest collection of fossilized pterosaur eggs ever found has shown that pterosaurs, the airborne cousins of dinosaurs, could not fly right

away and needed care from their parents, researchers said Thursday.

Pterosaurs were reptiles, and the first creatures—after insects—to evolve powered flight, meaning they flapped their wings to stay aloft instead of simply jumping and gliding.

First known to exist as many as 225 million years ago, they went extinct along with the dinosaurs about 65 million years ago.

Until now, scientists had found some pterosaur eggs with remains inside, including three in Argentina and five in China.

But the latest report in the peer-reviewed US journal *Science* is based on the biggest collection to date—215 fossilized eggs that were found in a 10-foot (three-meter) long sandstone block in northwestern China's Hami City, Xinjiang Uygur Autonomous Region.

"Since these are extremely fragile fossils, we were very surprised to find so many in the same place," Brazilian paleontologist Alexander Kellner told AFP.

"Because of this discovery, we can talk about the behavior of these animals for the first time."

Needed their parents

Sixteen of the eggs contained fossilized remains of a pterosaur species known as *Hamipterus tianshanensis*.

As adults, these creatures would have stood about four feet tall, with a wingspan of 11 feet.

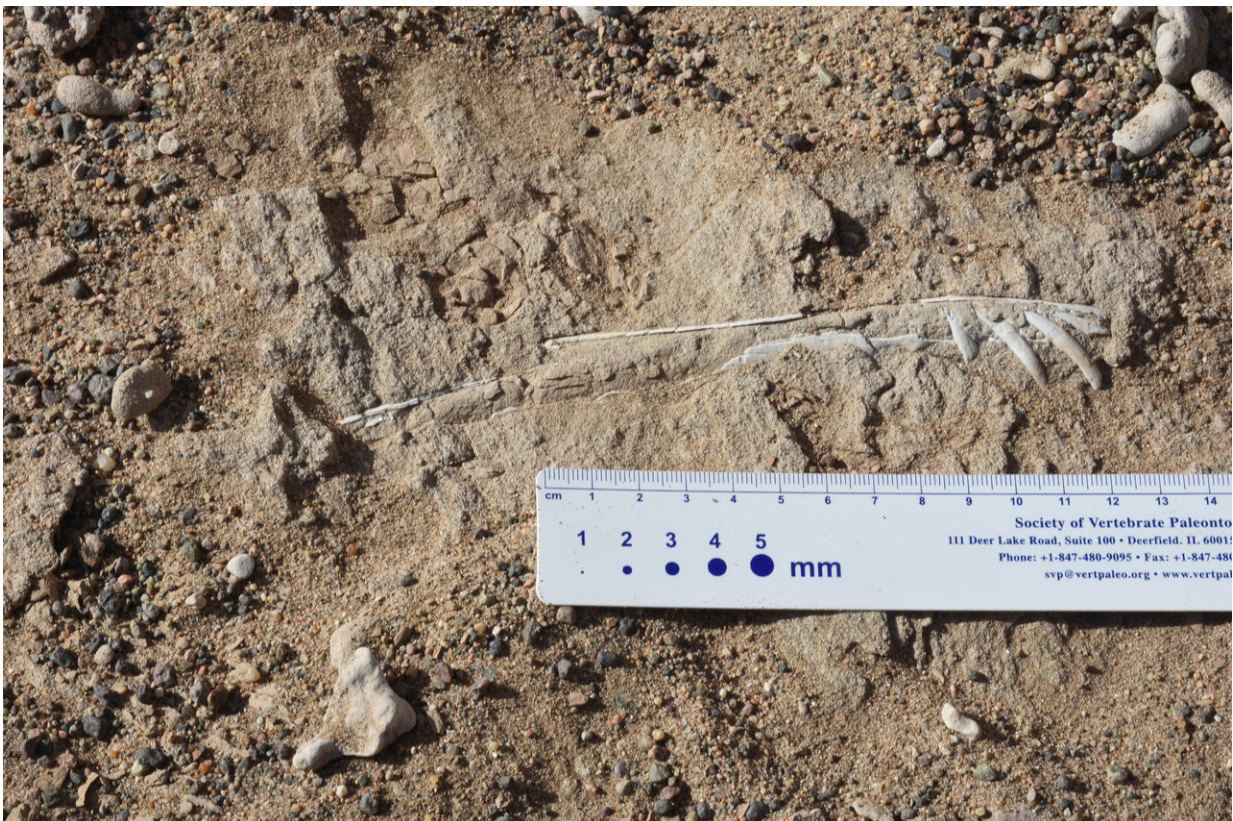
None of the eggs held a full set of pterosaur bones, likely because pieces

were lost over the years due to storms and floods.

But scientists did find partial wing and skull bones, along with one complete lower jaw, which fill in aspects of pterosaurs' life cycle that have been poorly understood until now.

Using three-dimensional computed tomography scans, they discovered intact and well-developed thigh bones suggesting the creatures "benefited from functional hind legs shortly after hatching," said the report.

But their chest muscles were weak.

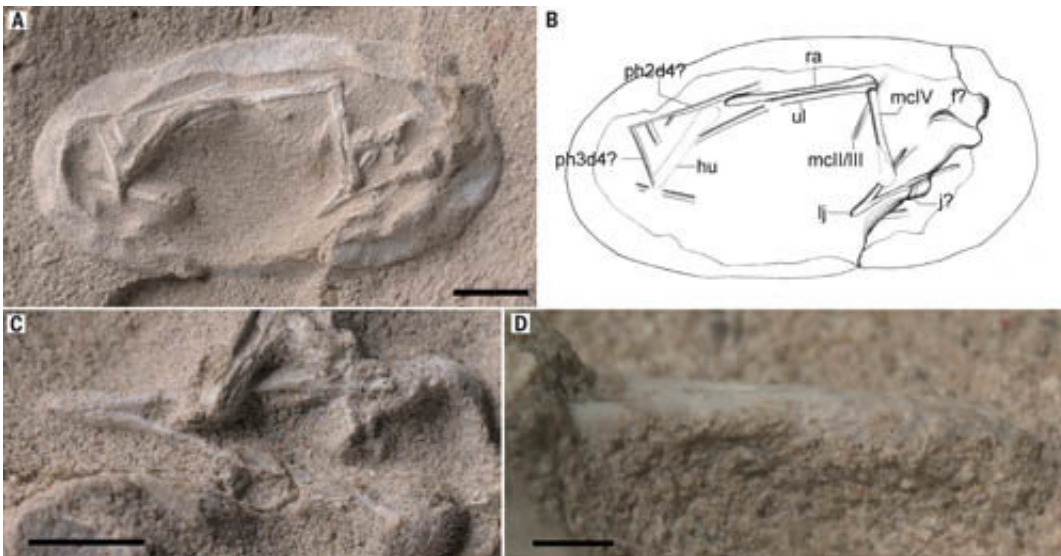


Pterosaur lower jaw eroding on the surface. Note the large teeth, one of the characteristics of *Hamipterus tianshanensis*. Credit: Alexander Kellner (Museu

Nacional/UFRJ)

"This shows that when pterosaurs hatched, they could walk but not fly," said Kellner.

"They needed their parents. This is one of the biggest discoveries we have made."



Embryo 12, the most complete one, containing a partial wing and cranial bones, including a complete lower jaw. Photo and line drawing showing the lower jaw exposed in ventral view (A, B), scale bar 10 mm; (C) Close-up of the lower jaw, scale bar 5 mm; (D) Close-up of the anterior portion of the lower jaw in left view, scale bar 1 mm. Credit: WANG Xiaolin

Nesting behavior

Adult pterosaur bones were also scattered across the site, a sign that they

returned to the same nesting spots over time, much the same as modern day sea turtles.

The massive numbers of eggs and bones point to major storms thrashing the site, submerging the eggs in a lake where they floated briefly before sinking and becoming buried alongside adult skeletons.



Pterosaur egg in the field. Note the fragility of this material. Credit: Alexander Kellner (Museu Nacional/UFRJ)

Researchers also noted that the cracked exterior of the eggs resembled the fragile softness of lizard eggs.

"All are deformed to a certain extent, which indicate their pliable nature," said the study.

One of the young pterosaurs was estimated to be "at least two years old and still growing at the time of its death, supporting the growing body of evidence that pterosaurs had long incubation periods."



Pterosaur eggs, preserved. Credit: Wang et al., *Science* (2017)

An accompanying article in the journal *Science*, written by D. Charles Deeming of the University of Lincoln, called the study "remarkable for the number of eggs in association with adults and juvenile pterosaurs

that it reports on."

However, many questions remain, including whether the size of each clutch was really two as previous studies have suggested, just how the pterosaurs concealed their eggs, whether beneath vegetation or sand or soil, and why so many of the eggs appear dehydrated.



Life reconstruction of *Hamipterus tianshanensis*. Credit: ZHAO Chuang

"Hopefully additional finds of equally spectacular fossils will help us answer such questions," he wrote.



More than 200 eggs of *Hamipterus tianshanensis* preserved in sandstones (IVPP V 18941 to 18943), scale bar 200 mm. Credit: Wang Xiaolin

More information: X. Wang et al., "Egg accumulation with 3D embryos provides insight into the life history of a pterosaur," *Science*

(2017). [science.sciencemag.org/lookup/ ... 1126/science.aan2329](https://science.sciencemag.org/lookup/.../1126/science.aan2329)

© 2017 AFP

Citation: Pterosaur hatchlings needed their parents, trove of eggs reveals (Update) (2017, November 30) retrieved 20 April 2024 from <https://phys.org/news/2017-11-hundreds-pterosaur-eggs-reveal-early.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.