

# Paleontologists discover 250-million-year-old new species of reptile in Brazil

March 11 2016

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An international team of scientists, from three Brazilian universities and one UK university, have discovered a new fossil reptile that lived 250 million years ago in the state of Rio Grande do Sul, southernmost Brazil. The species has been identified from a mostly complete and well preserved fossil skull that the team has named *Teyujagua paradoxa*.

The [fossil](#) was discovered in the beginning of 2015 by a team from the Paleobiology Laboratory of the Universidade Federal do Pampa (Unipampa), in a Triassic rock exposure near the city of São Francisco de Assis. This discovery, published today in the journal *Scientific Reports* (Nature Publishing Group), helps to clarify the initial evolution of the group that gave rise to dinosaurs, pterosaurs (flying reptiles), crocodiles and birds.

The name *Teyujagua* comes from the language of the Guarani ethnic group and means 'fierce lizard'. It references a mythological beast called Teyú Yaguá, usually depicted as a lizard with a dog's head. *Teyujagua* is very different from other fossils from the same age. Its anatomy is intermediate between the more primitive reptiles and a diverse and important group called 'archosauriforms'. Archosauriformes include all the extinct dinosaurs and pterosaurs, along with modern day birds and crocodiles.

The discovery of *Teyujagua* is important because it lived just after the great Permo-Triassic mass extinction event that occurred 252 million years ago. This extinction wiped out about 90 per cent of all species then

living and was probably triggered by giant and intense volcanic eruptions in the eastern part of what is now Russia.

*Teyujagua* provides new insights into how ecosystems on land recovered and developed following this extinction. After the extinction, ecosystems on land were sparsely populated, providing opportunities for some groups of survivors to expand in number and diversity. Archosauriforms and their close kin like *Teyujagua* became the dominant animals in ecosystems on land and eventually gave rise to dinosaurs.

*Teyujagua* was a small, quadrupedal animal, and grew up to about 1.5 metres in length. Its teeth were recurved with fine serrations and sharply pointed, indicating a carnivorous diet. The nostrils were placed on the upper part of the snout, a typical feature of some aquatic or semi-aquatic animals, such as modern day crocodiles. *Teyujagua* likely lived in the margins of lakes and rivers, hunting amphibians and procolophonids, extinct, small bodied reptiles similar to lizards.

Dr Felipe Pinheiro, from Universidade Federal do Pampa, São Gabriel, Rio Grande do Sul said: 'The discovery of *Teyujagua* was really exciting. Ever since we saw that beautiful skull for the first time in the field, still mostly covered by rock, we knew we had something extraordinary in our hands. Back in the lab, after slowly exposing the bones, the fossil exceeded our expectations. It had a combination of features never seen before, indicating the unique position of *Teyujagua* in the evolutionary tree of an important group of vertebrates.'

Dr Richard Butler, from the University of Birmingham's School of Geography, Earth and Environmental Sciences, said: '*Teyujagua* is a really important discovery because it helps us understand the origins of a group of vertebrates called archosauriforms. Archosauriforms are spectacularly diverse and include everything from hummingbirds and crocodiles to giant dinosaurs like *Tyrannosaurus rex* and *Brachiosaurus*.

*Teyujagua* fills an evolutionary gap between archosauriforms and more primitive reptiles and helps us understand how the archosauriform skull first evolved.'

Excavations in the site where *Teyujagua* was found are still ongoing, with more promising fossil materials being found. These new discoveries will certainly provide new insights into the nature of terrestrial ecosystems just before the appearance of the first dinosaurs, as well as the patterns of faunal recovery after major extinction events.

Provided by University of Birmingham

Citation: Paleontologists discover 250-million-year-old new species of reptile in Brazil (2016, March 11) retrieved 20 March 2024 from <https://phys.org/news/2016-03-paleontologists-million-year-old-species-reptile-brazil.html>

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