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## Giant salamanders co-existed with first dinosaurs

An international<sup>(1)</sup> team including a paleontologist from the *Centre de recherches en paléobiodiversité et paléoenvironnements* (CNRS / Muséum national d'Histoire naturelle / UPMC) has discovered a new fossil species of "giant salamander" in Portugal. The species, named *Metoposaurus algarvensis*, was found in rock dating from about 230 million years ago. This research, published on 24 March 2015 in the *Journal of Vertebrate Paleontology*, confirms that these huge carnivorous amphibians lived and flourished at the time of the first dinosaurs.

During excavations in 2010 and 2011 in the Algarve in southern Portugal, a team of paleontologists unearthed a set of fossilized bones, which they described as belonging to a new species of "giant salamander". Only a few square meters were surveyed, but they held the bones of a dozen animals, piled up on top of one another. Vertebrae, clavicles and, above all, skulls were discovered here. The latter were well preserved and had a characteristic flat shape. The scientists' meticulous description of these findings led to the conclusion that this was a new species. *Metoposaurus algarvensis* — the "scaly monster of the Algarve" — as the researchers have named it, was a carnivore up to 3 meters in length that lived in rivers and subtropical lakes, in much the same way as present-day crocodiles.

The presence of this new species in Portugal finally establishes the connection between other such giant amphibians already known to have lived in the north (Germany and Poland) and south (Morocco) at the same time. It confirms that these "monsters" colonized all the tropical freshwater ecosystems of the Pangea supercontinent of the period, which was also that of the first dinosaurs.

The new description also made it possible to obtain a 3D life reconstruction of one of these giant amphibians. This work was carried out in collaboration with digital sculptor Marc Boulay, a specialist in reconstructing extinct species. In addition to the information provided by the skulls, vertebrae and pectoral girdle (clavicle) of the Portuguese species, the artist also referred to more complete skeletons of Moroccan and Polish species.

Finally, the accumulation of fossils in the rock suggests that these animals died suddenly in large numbers when the climate changed and their aquatic environment dried up. This mass mortality raises a new question for paleontologists: Was the drying seasonal or was it the result of global warming? More field studies are needed to answer this question.

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(1) The group also included British (Museum of Edinburgh, University of Birmingham) and Portuguese (Museu da Lourinhã) researchers.



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*Paleontologists at work. The fossiliferous layer was thoroughly explored from the top down, using small hammers and chisels. Before extraction, fossils are carefully covered in paper and plaster to prevent damage until more precise cleaning can be performed in the laboratory.*

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*Fragments of the flat skulls of *Metoposaurus algarvensis* (total length can reach up to 40 cm). Back at the Museu da Lourinhã, near Lisbon, the plaster casts are opened and the fossils carefully removed from their rock matrix.*

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3D reconstruction of *Metoposaurus algarvensis*

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## Bibliography

A new species of *Metoposaurus* from the Late Triassic of Portugal and comments on the systematics and biogeography of metoposaurid temnospondyls, Stephen L. Brusatte, Richard J. Butler, Octávio Mateus, and J. Sébastien Steyer. *Journal of Vertebrate Paleontology*, 24 March 2015. DOI: 10.1080/02724634.2014.912988

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