

Bizarre armoured spikes belong to oldest ankylosaur ever discovered

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Ankylosaur bone. Credit: The Natural History Museum

An unusual fossil showing a series of spikes fused to a rib has been revealed to be the remains of the oldest ankylosaur ever found and the first from the African continent.

The exciting discovery was made in the Middle Atlas Mountains of Morocco at the same site where researchers from the Natural History

Museum (NHM) previously discovered the oldest [stegosaur](#) ever found.

Dr. Susannah Maidment, a researcher at the NHM and honorary senior lecturer at the University of Birmingham, described the [new species](#) and named it *Spicomellus afer*: *Spicomellus* meaning 'collar of spikes' and *afer* meaning 'of Africa.'

"At first we thought the specimen could be part of a stegosaur, having previously found them at the same location. But on closer inspection, we realized the fossil was unlike anything we had ever seen."

The specimen is so unusual that at first the researchers wondered if it could be a fake. CT scanning proved it to be the real deal, and a [cross section](#) from the base of the specimen showed a cross hatch pattern in the bone unique to ankylosaurs, revealing its identity.

Dr. Maidment continues: "Ankylosaurs had armored spikes that are usually embedded in their skin and not fused to bone. In this specimen we see a series of spikes attached to the rib, which must have protruded above the skin covered by a layer of something like keratin."

"It is completely unprecedented and unlike anything else in the animal kingdom."

The ankylosaurs were a diverse group of armored dinosaurs related to the better-known stegosaurs. They were present throughout the Cretaceous period but there is little evidence of them before then, making this new fossil not only the first found in Africa but also the earliest example of the group ever discovered.

The new discovery dates from the Middle Jurassic period around 168 million years ago. It has helped to fill an important gap in our knowledge of dinosaur evolution, and suggests that ankylosaurs may have had a

global distribution.

The discovery also calls into question a previous theory that ankylosaurs outcompeted stegosaurs and led to their extinction. This new find, however, means the two groups co-existed for over 20 million years, and implies the extinction of the stegosaurs may have happened for other reasons.

The fossil that led to the description of this new species is now part of the Natural History Museum's collections and will be the subject of ongoing study.

Dr. Maidment concludes: "Morocco seems to hold some real gems in terms of dinosaur discoveries. In just this one site we have described both the oldest stegosaur and the oldest ankylosaur ever found.

"When circumstances allow, we hope to return and work with our colleagues at the University of Fez to help them to establish a vertebrate paleontology lab so that further finds can be studied in Morocco."

The study "Bizarre dermal armour suggests the first African [ankylosaur](#)" is published in the journal *Nature Ecology & Evolution*.

More information: Susannah C. R. Maidment et al, Bizarre dermal armour suggests the first African ankylosaur, *Nature Ecology & Evolution* (2021). [DOI: 10.1038/s41559-021-01553-6](https://doi.org/10.1038/s41559-021-01553-6)

Provided by University of Birmingham

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