



## First evidence of marine reptiles from the Upper Triassic (Keuper) of Alpartir (Zaragoza, Spain)

NAVARRO-LORBÉS, P.<sup>1,2</sup>, ALONSO, A.<sup>1</sup>, GIL IMAZ, A.<sup>3</sup>, CANUDO, J.I.<sup>1,4</sup>

1: Grupo Aragosaurus-IUCA, Área de Paleontología, Facultad de Ciencias, Universidad de Zaragoza. Pedro Cerbuna 12, 50009 Zaragoza, Spain, pnavalorb@gmail.com, talonso@unizar.es, jicanudo@unizar.es

2: Paleoymás S.L. Pol. Empresarium, Retama 17, nave 24C, 50720 La Cartuja Baja, Zaragoza, Spain

3: Departamento de Ciencias de la Tierra, Facultad de Ciencias, Universidad de Zaragoza. Pedro Cerbuna 12, 50009 Zaragoza, Spain, agil@unizar.es

4: Museo de Ciencias Naturales de la Universidad de Zaragoza. Plaza Basilio Paraíso, 50008 Zaragoza, Spain

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The diversification of marine reptiles during Triassic gave rise to several lineages that developed during Mesozoic, such as ichthyosaurs and plesiosaurs. There are other groups of marine reptiles exclusively Triassic in age, like placodonts, thalattosaurs or nothosaurids. The palaeontological record of both marine and terrestrial vertebrates from the Triassic has been studied in Europe for decades. The Triassic vertebrates of the Iberian Peninsula, despite of its joint position between Gondwana and Europe during the beginning of the Mesozoic, is poorly known compared with other countries like Germany or Italy (Rieppel, 2000; Miguel Chaves *et al.*, 2015). The Triassic record of the Iberian Peninsula is known by mainly tracks from the Lower Triassic (Bundsandstein facies), abundant remains from the Middle Triassic (Muschelkalk facies) indicating a diverse marine fauna, and scarce isolated elements of marine and terrestrial faunas from the Upper Triassic (Bardet *et al.*, 2008; Gand *et al.*, 2011). During the last years several discoveries have revealed the diverse fauna of continental and marine vertebrates registered in Upper Triassic levels of the Iberian Peninsula (Mateus *et al.*, 2014; Miguel Chaves *et al.*, 2015), but there is still a lack of knowledge of this period if it is compared with Jurassic and Cretaceous.

There is scarce knowledge of the Upper Triassic tetrapod faunas, probably due to both stratigraphic peculiarities and tectonic evolution of the Iberian Peninsula. The Upper Triassic (Keuper facies) usually appears as a detachment level of Alpine Orogeny structures, and the high gypsum content in those levels of the Iberian Peninsula also contributed to deformation, due to salt structure diapirization in some areas (Sopeña, 2004). In the last years several outcrops have revealed fossiliferous Upper Triassic levels, especially in the south part of Portugal, Algarve region (Mateus *et al.*, 2014; Brusatte *et al.*, 2015) and in Spain, in the provinces of Guadalajara (Miguel Chaves *et al.*, 2014) and Teruel (Miguel Chaves *et al.*, 2015). The aim of this communication is to study the first marine vertebrate from the Keuper of the Zaragoza province (Spain).

The fossil MPZ 206/107 was discovered 25 years ago by one of us (Gil Imaz). It was deposited in the Museo de Ciencias Naturales de la Universidad de Zaragoza (MPZ) and since then, it remained unnoticed. MPZ 206/107 was found within the municipality of Alpartir, a small town located 50 km west-southwest of the city of Zaragoza. Geologically, the fossil site is placed within the Aragonese Branch of the Iberian Chain, in the contact zone between the Ordovician-Silurian units of the Herrera Unit (Carls, 1983) and the Triassic units in classical Germanic facies of the



Aragonese Branch of the Iberian Chain: Bundsanstein, Muschelkalk and Keuper facies. The fossil was found isolated in a mudstone of the Keuper.

MPZ 206/107 consists in an isolated caudal vertebral centrum. It preserves only an asymmetric centrum. The height of the centrum is 33 mm, the maximum length is 19 mm and the maximum width is 33 mm. The centrum is amphicoelus, with subhexagonal anterior and posterior facets, and anteroposteriorly concave lateral and ventral surfaces. An asymmetry between the two facets is observed, the posterior one is slightly laterally compressed, while the anterior one presents no appreciable compression. The dorsal surface has an expanded platform where the neural arch articulates. The morphology of the platform is usually described as “butterfly shaped” (Rieppel, 1994): a groove runs anteroposterior and two depressions are located laterally giving a cruciform shape. Laterally, it presents a single rib articulation facet in the dorsal half of the centrum. The presence of the cruciform or “butterfly shaped” dorsal surface indicates that the vertebra belongs to an eosauropterygian (Rieppel, 1994). The lack of other apomorphies makes difficult a more specific classification.

The presence of an eosauropterygian reptile in the Alpartir area of Zaragoza Province shows a new fossiliferous zone of the Keuper facies in the Aragonese Branch of the Iberian Chain.

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