FIRST EUROPEAN EVIDENCES OF PUPAL CHAMBERS ON DINOSAUR BONES FROM THE JURASSIC-CRETACEOUS BOUNDARY (VALENCIA, SPAIN)

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***Keywords**: Taphonomy, bioerosion, insect behaviour, sauropod, Villar del Arzobispo Formation*

The ability of insects to produce damage in bones has been preserved on fossil bones as various kinds of traces such as tracks, burrows and borings, which are due to feeding, reproduction and/or shelter behavior. In this contribution, we report some evidences of bioerosion by insects on dinosaur bones. The two specimens studied were collected from the Villar del Arzobispo Formation (Kimmeridgian-Early Berriasian) of Los Serranos (Valencia, Spain) and were identified as sauropod femur and caudal centrum. We determined a large number of marks with a circular to ovoid outline and a cylindrical to conical shape. The study includes detailed size measurements (width, length and depth) and spatial distribution of a total of 18 of these traces on a 3D model of the bone. Scanning was carried out through a portable Artec Spider optic scanner and further post-process and measuring of the chambers were also carried out in Artec Studio software. Comparisons with other fossils indicate that the traces can be tentatively attributed to dermestid pupal chambers. Insect-modified dinosaur bones are reported from the Upper Jurassic of North America and more recently from the Middle Jurassic of China and Lower Jurassic of South Africa. To date, the earliest record of pupal chambers on fossil bones in Europe was from the Neogene of Germany. Therefore, the evidences presented in this study are the oldest in this continent. These findings also provide valuable new information associated with the origin and worldwide distribution of this insect behaviour during the Mesozoic.