

59III. FIRST OVERVIEW ON PRESERVATIONAL PATTERNS IN “LO HUECO” FOSSIL SITE (UPPER CRETACEOUS, CUENCA, SPAIN)

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The “Lo Hueco” fossil site includes a stratigraphic succession of varicolored marly mudstone levels (V, G1, R1, G2, R2 and M), which is partially cut by a sandy channel structure (C) and a sulphated interval (S). The C structure and the G1, G2 and R2 (lower part) levels present an exceptional richness (more than 8500 macroremains collected in a single palaeontological excavation) and diversity of fossils taxa. The palaeontological record is mainly composed by vertebrates, but also by plants and invertebrates. Among the vertebrates, titanosaur dinosaurs (some of them with partially articulated skeletons) are the most common representatives, although actinopterygians and teleostean fishes, amphibians, squamate lizards, panpleurodiran (bothremydids) and pancryptodiran turtles, eusuchian crocodiles, pterosaurs, theropod dinosaurs (Dromaeosaurinae and Velociraptorinae dromaeosaurids) and ornithischian dinosaurs (Rhabdodontidae euornithopods) are also well represented.

Some important data can be extracted from the study of the preservational patterns of the macroremains collected at the fossil site. Firstly, most of plants are preserved as carbonized remains whose interior is filled by gypsum. Secondly, most of invertebrates are preserved as internal moulds of marly mudstone or gypsum. Thirdly, vertebrates are exclusively represented by biomineralized remains (mainly bones, teeth and scales). Most of these vertebrate remains present a sequentially developed preservational

pattern with: a first infilling of gypsum (that reach internal tissues, similar to that present in plants), a ferruginous scab covering the fossils, and a second precipitation of gypsum, showing the typical fishtail or swallowtail crystal habit, that eventually passes through the first infilling and the ferruginous scab.

Fossil remains are concentrated in the C structure and the G1, G2 and R2 (lower part) levels, constituting four accumulation units that can be defined as taphofacies considering their taphonomical and geochemical characterization. Macrofossils from these four taphofacies are preliminarily studied in an attempt to point out the main patterns of preservation and to elucidate their taphonomical history during the formation of this fossil site. Macroremains from the C taphofacies are mainly of centimetric-size, highly altered with some evidences of abrasion and fragmentation, and randomly distributed, maybe as a consequence of a high energy depositional environment. In contrast, G1, G2 and R2 (lower part) taphofacies are generally of decimetric-size, with almost complete fossils with non-random distribution and with an unusually proportion of anatomical connected vertebrate remains, including a extraordinary number of large individuals with nearly complete, articulated skeletons close to the C taphofacies. Among those, the elongated fossils that appear isolated in G1 and G2 taphofacies (especially those in G1) are parallel-oriented and perpendicular to the main axis of the C structure. This feature suggests a low energy depositional environment clearly influenced by the C structure. Taphonomical analysis of macro-remains has allowed us to define four taphofacies and their relationships with patterns of preservation. Considering the implicit information about biostratinomic and fossildiagenetic alterations contained in these relationships, taphofacies definition has allowed us to correlate different patterns of preservation with paleoenvironmental reconstructions. However, it will be necessary to pursue further taphonomical, geological and palaeontological studies, in order to unveil the implied processes and the existing environments during the “Lo Hueco” fossil site formation (Research projects CGL2008-03112/BTE, PAI08-0204-1312, CIT370000-2008-8).