THE EGGSHELL ASSEMBLAGES FROM THE MAASTRICHTIAN SANTA MARINA 1 SITE IN LOARRE (HUESCA)

Cristina Sequero[1], José Ignacio Canudo[2], Lope Ezquerro[1], David Marín-Matilla[2], Carmen Núñez-Lahuerta[2,3], Manuel Pérez-Pueyo[2,4] & Miguel Moreno-Azanza[2]

[1]Departamento Geodinámica, Estratigrafía y Paleontología, Facultad de Ciencias Geológicas, Universidad Complutense de Madrid, Madrid, Spain.
[2]Aragosaurus-IUCA, Recursos geológicos y Paleoambientes, Departamento de Ciencias de la Tierra, Universidad de Zaragoza, Zaragoza, Spain.
[3]Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), Tarragona, Spain.
[4]Departamento de Geología/Geologia Saila, Facultad de Ciencia y Tecnología/Zientzia eta Teknologia Fakultatea, Universidad del País Vasco/Euskal Herriko Unibertsitatea, Leioa, Euskadi, Spain.
E-mail: csequero@ucm.es

Keywords: *Pseudogeckoolithus*, Testudoolithidae, Krokoolithidae, Late Cretaceous.

Santa Marina 1 is an egg bearing locality in the vicinity of Loarre (Aragón, NE Spain) where over a hundred eggs attributed to the oospecies *Megaloolithus siruguei* have been dug since 2020. The palaeontological site outcrops in the continental Garum Facies (Maastrichtian), comprising a sequence of (~15 m-thick partially covered) succession of brown and red massive mudstones in dm- to m-thick tabular strata with bioturbation, greenish and orangish mottling, iron haloes, carbonate and ferruginous nodules. These deposits are interbedded with brownish and whitish fine- to very coarse-grained sandstones in dm-thick tabular or channeled strata. Upwards the mudstones became violaceous and present an intense pedogenesis, where the maximum concentration of *Megaloolithus siruguei* eggs and eggshells has been identified. Eggshell fragments from this study were recovered from a red mudstone level which overlays the *Megaloolithus siruguei* mottled mudstone nesting horizon. During the diggings, over 200 kg of bulk rock were disaggregated in water with hydrogen peroxide and screen washed using 2, 1 and 0.5 mm mesh sieves. Abundant nodules and carbonate clasts hindered rock processing, producing relatively poor concentrates. Resulting material was picked under a binocular microscope, showing an interesting fossil association, including few invertebrates remains, scarce clavatoracean charophyte utricles and eggshell fragments. Most eggshell fragments belong to *Megaloolithus siruguei* (centimetric to millimetric), probably resulting from the reworking of the underlying and lateral nesting ground. Together with these large fragments, sub millimetric eggshell fragments have been identified. These eggshell fragments show signs of transport, including rounding and abrasion in both external and internal surfaces. Preliminary analysis using scanning electron microscopy has allowed to identify eggshells of *Pseudogeckoolithus* sp., attributed to theropod dinosaurs, *Pachykrokoolithus excavatum*, attributed to allodaposuchian crocodylomorphs and ?Testudoolithidae indet., attributed to Testudines. Besides, possible cf. *Fusioolithus* sp. eggshell fragments are recognized, but their preservation is too poor to corroborate this finding.

Acknowledgements: PID2024-158833OB-I00 by MICIU/AEI/ 10.13039/501100011033/FEDER, UE); PR17/24-31911, by Comunidad de Madrid-UCM, by E18_23R Aragosaurus: Recursos Geológicos y Paleoambientales founded by Gobierno de Aragón. MMA by RYC2021-034473-I, MCIN/AEI/10.13039/501100011033, and EU (NextGenerationEU).