

REPTILE EGG SITES FROM LOURINHÃ FORMATION, LATE JURASSIC, PORTUGAL

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The list of egg and embryos sites from the Lourinhã Formation, Kimmeridgian/Tithonian, is as follows: Paimogo (nesting and embryo site; base of Amoreira-Porto Novo member), Porto das Barcas (nesting, embryo and eggshell site; Bombarral member), Zimbral (eggshell site; Praia Azul member), Casal da Rôla (eggshell site; Amoreira-Porto Novo member) and Peralta (eggshell site; Praia Azul member).

Two eggshell types have been detected in Paimogo (specimen number ML565). The rarest is crocodiloid basic type and angusticanalicate showing a thickness of 0.2-0.35mm, with no ornamentation. The other eggshell type, which is more common, has been ascribed to the theropod *Lourinhanosaurus*, and bears two distinct layers: mammillary and continuous. However, it was not possible to determine if the boundary is abrupt as in ornithoids (sensu Mikhailov). The shell, average 0.92mm (Antunes *et al.* 1998), being both angusticanalicate and obliquicanalicate and surface ornamentation is compactituberculate formed by small nodes.

Peralta bears at least three eggshell sites: 'Peralta I' (ML 771), 'Peralta II' and "Peralta Vale das Tartarugas" (ML 1195). Only eggshells from 'Peralta I' and "Peralta Vale das Tartarugas" were analyzed. From 'Peralta I' the eggshells are prismatic possibly ornithoid (column: 0.56mm and mammilla: 0.21mm), eggshell thickness 0.77mm; it presents an ornamentation, with a pore diameter of 0,16 mm and pore system similar to Paimogo. The structure and size of the eggshells of Paimogo and Peralta I sites are comparable, thus we suggest them to be of the same species (*Lourinhanosaurus antunesi*) or a closely related taxon. The Peralta sites are less than 800 m from the type locality of *Lourinhanosaurus* and within the same stratigraphic range. Eggshells from "Peralta Vale das Tartarugas" are prismatic with thickness of 0.74mm, are also compactotuberculate and possibly obliquicanalicate.

A clutch with 65 cm diameter (ML 1188) was found south of Porto das Barcas, presenting embryo bones and teeth of a saurischian dinosaur. All the eggs are crushed and as such it is difficult to distinguish individual boundaries, nevertheless it is possible to recognize bones, including skull elements, from more than one embryo. The eggshells are spherulitic basic type (possibly dendrospherulitic or filispherulitic). The thickness is 1.23mm, and presents prolatocanalicate pore system and ramotuberculate ornamentation.

Only eggshells have been collected at Casal da Rôla (ML1194). The eggshells seem prismatic and it was impossible to determine the pore system. They are 0.78mm thick, and the outer surface is smooth with no ornamentation (probably due to dissolution).

The locality of Zimbral only provided two eggshells until now. The eggshell that was analyzed was, however, diagenetically altered. It presents a diagenetic layer on the outer surface that represents half of the eggshell thickness and as such, eggshell features are hardly acquirable.

All the material reported here requires additional studies in order to provide a better paleobiological and taphonomic context for each of the newly found nests.

Antunes, M.T.; Taquet, P. & Ribeiro, V. 1998. Upper Jurassic dinosaur and crocodile eggs from Paimogo nesting site (Lourinhã, Portugal). *Memórias da Academia de Ciências de Lisboa*, 37: 82-100.

Carpenter, K. 1999. *Eggs, nests and baby dinosaurs: a look at dinosaur reproduction*. Indiana University Press, Bloomington.