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Sand spherules interpreted as crustacean feeding pellets from an Eocene shore environment (Western Carpathians — Slovakia)

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ABSTRACT

Sand spherules from Eocene shallow-marine deposits are identified as crab (Brachyura) feeding pellets. Several points support this interpretation: (i) microscopic study of these structures shows the absence of fine-grained matrix; (ii) spatial distribution within shallow water deposits (foreshore to upper shoreface) is interpreted on the basis of well sorted, fine-grained sandstones and sedimentary structures, such as a low-angle wedge-shaped tabular type cross-bedded units, ripples, sand bars, and intercalated storm layers of coarser material, with trace fossils identified as belonging to the archetypal *Skolithos* to *Cruziana* ichnofacies and (iii) the sand spherules have a bimodal size distribution and all these structures have a regular spherical shape. Another argument that implies biogenic origin of spherules and supports the interpretation of them as fossil feeding pellets of crabs is their association with other crustacean trace fossils (*Ophiomorpha*) and the occurrence of identical structures interpreted as fossil feeding pellets associated with a comparable trace fossil assemblage from Miocene shallow water deposits in southwest Japan. The recognition of crustacean sandstone spherules in the sedimentary record is a good indicator of the shoreline palaeoenvironment.