

Paleobiology of the crustacean trace fossil *Spongiomorpha iberica* in the Miocene of southeastern Spain

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The trace fossil *Spongiomorpha iberica* locally occurs in the Tortonian (Upper Miocene) marine strata of the Fortuna basin in southeastern Spain, and its excellent preservation state allows a reliable reconstruction of its main morphologic features. The burrow systems are branched (but not anastomosing), and they include numerous, short, blind tunnels. The burrow walls are strongly ornamented with bioglyphs displaying a rhomboidal pattern, consisting mostly of individual “Y”-shaped scratches. Smaller, secondary bioglyphs consist of sets of less incised transverse scratches. These features allow us to assign the ichnospecies to a decapod crustacean, most likely an alpheid or thalassinidean shrimp. The burrow apparently served as a refuge for the inhabitant, which fed upon microorganisms growing on the walls of the burrow by means of scraping the interior surfaces with the maxillipeds or other mouth parts. It is also likely that the shrimp used the multiple blind tunnels to store organic material (probably plant detritus) to be used for later consumption. The crustaceans colonized mud firmgrounds, which were formed by erosion during a rapid sea-level fall. Thus, the burrows occur in direct association with erosional regressive surfaces and therefore are good stratigraphic indicators of abrupt paleoenvironmental change.

Key words: Arthropoda, Crustacea, Decapoda, *Spongiomorpha*, ichnology, trace fossil, bioglyph, Miocene, Spain.

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