

Serpulid-microbialitic bioconstructions from the Sarmatian (Middle Miocene) of the Central Paratethys Sea

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An upper Sarmatian sand and gravel pit at Piuspuszta near Fertőrákos (NW Hungary) exposes a nearly 15-m-thick succession of shallow marine sediments which have been repeatedly subaerially exposed, documented by several caliche horizons. In a weakly solidified peloidal sand stacked bowl-shaped bioherms are preserved reaching a size of 45 cm in diameter and 40 cm in height. The shape of the bioherms reflects a series of growth stages with an initial phase ('start-up stage') followed by a more massive 'keep-up stage' which grades into a structure with a collar-like outer rim and a central protrusion and finally a termination of growth ('give-up stage'). The bioherms were mostly embedded in sediment and the 'stages' reflect a reaction on sediment accretion and sinking into the soft sediment. The bioherms are Janua-microclots-acicular cement boundstones with densely packed Janua tubes surrounded by microclots and acicular cement solidifying the bioherm. The surrounding sediment is a thrombolite made of peloids and polylobate particles (mesoclots), which are solidified syndimentarily by micrite cement and dog-tooth cement in a later stage. The setting was a shallow subtidal environment with normal marine or hypersaline, oligotrophic conditions with elevated alkalinity. The stacked bowl-shaped microbialites are a unique feature so far unknown. Modern and Neogene microbialite occurrences are no direct analogues to the described structures but the marine examples, e.g., at the Bahamas, Shark Bay and the Persian Gulf offer insight into the microbial composition and environmental parameters.