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Differences and similarities of the Eocene to recent Sphaerogypsina tests collected from the Pannonian basin to the Adriatic Sea

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With a new series of shots in the X-ray tomographic techniques (CT), the study of fossil (Eocene and Miocene) and recent tests of Sphaerogypsina globulus (Reuss, 1848) sensu lato, sampled in the Adriatic Sea and adjacent coastal areas, have continued.

The Eocene, Lutetian samples collected at the NW margin of the Central Neotethys (Benkovac) contain tests up to 2 mm in diameters, while specimens found in Priabonian deposits from the southern outskirts of the Eastern Alps (Šuštarica, Ravna Gora) and in the central Pannonian basin (Eger) are smaller, with diameters of 1.2 mm. In the Oligocene, Rupelian, sediments, deposited in the Slovenian corridor, area south of the E. Alps, known as representing transition between recessing Neotethys and emerging Pannonian Sea, (Gornji grad, Nova Štifta), foraminiferal tests are of 1.1 mm in diameter. Globular tests of Miocene, Badenian, specimens (Nussdorf, north of the E. Alps), originally described as bryozoan Ceriopora globulus by Reuss 1848, attained 1.2 mm in diameter.

Comparison of tests diameters shows that Middle Eocene sphaerogypsinids had the largest tests among fossil taxa, implying that warm temperatures suited them a lot. The Oligocene tests, were smaller and the trend of decreasing in size persisted in the Miocene.

Recent tests, although collected over decades from different places in the Adriatic Sea, just recently have been systematically sampled at Pakleni Is. (Hvar), Kornati archipelago and Mali Čutin Is., and studied.The tests, with diameters ranging from 0.3 to 1.0 mm (an average of 0.6 to 0.8 mm), are very small in comparison with fossil forms. The life habitats, as type of substrate, light (sunny vs. shadowed areas) have been investigated, revealing that sphaerogypsinids prefer to live at water depth up to 50 – 60 m. Special attention is payed to find live specimens, which would provide the basis for DNA analysis.

The application of micro- tomography contributed significantly in studying test internal structure, because virtual slicing of test micrometer by micrometer allow study of the finest changes in skeletal elements and their imaging or filming. In taxonomic study, the criteria defined in Illustrated Glossary by Hottinger (2006) are applied. Comparison of internal structures of fossil and recent tests show the following differences: the size of embryonic chambers, positions of nepiont, compacted or loose adult cycles, various diameters of the stacks ; and the similarity demonstrated by the ultimate way of forming the globular tests no matter how eccentric position of proloculi are.