

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

Microendoliths are microorganisms that live inside hard substrates (usually composed of carbonate calcium) by boring small tunnels (usually below 0.1 mm in diameter) in which they reside. They may be phototrophic (algae, cyanobacteria) or heterotrophic (fungi). Some of them can live in the skeleton of living corals, a few millimeters beneath the coral tissue. Some phototrophic organisms such as green alga *Ostreobium* are adapted to extreme microenvironment, where less than 0.01% of the surface light penetrates. Endolithic algae are assumed to be either neutral or beneficial to corals (during coral bleaching), while fungi are considered as parasitic. Microendoliths might be advantageous in nutrient acquisition, finding a niche with limited competition, protection from some physical environmental stressors or protection from predatory grazing. Micoendolith symbionts (in a broad meaning of the term symbiosis) are common in modern corals, but their fossil record is rare. Palaeocene (Cenozoic) corals from the Polish Carpathians and Cenomanian (Late Cretaceous) corals from Saxony (Germany) are excellent material for studies of the activity of diversified symbiotic as well as post-mortem fossil microendoliths. They are commonly preserved as natural casts, that is microborings are filled with iron-rich minerals, which allow observe them under scanning electron microscope. There is significantly increase of studies on coral associated microorganisms (coral holobiont), including microendoliths, because they are crucial for coral health and disease, hence for the functioning of coral reefs. The project will provide palaeontological perspective on diversity of symbiotic microendoliths and provide new data for interpretation of palaeoecology of ancient coral reefs.