

## **Description for the general public**

Using 'the present as the key to the past', the results of the planned study will provide new data on identification in the fossil record of damages of the invertebrate skeletons caused by the predator activities from those that were induced by the so-called abiotic factors. On the one hand, the mechanisms and ways of shell destruction by modern predators (some fish) and drilling organisms (snails), will be observed. On the other hand, skeletal deformations caused by physical abiotic factors, i.e., abrasion or crushing during post-mortem transport caused by currents/wave action will be observed. These studies will hopefully provide useful criteria (size of fragmentation, the degree of roundness, the presence of distinct traces on the surface damage, the shape of the edges) criteria for differentiating skeletal damage caused by various predators versus those produced by abiotic factors. It is also planned to carry out observations of bite marks produced by recent sea urchins on other echinoderms as well as drill holes produced by predatory snails on other molluscs. Changes in the frequency of the occurrences of the angular shell fragmentation resembling the so-called regurgitates or changes in the frequency of bite marks on fossil materials are commonly treated by paleontologists as a reliable source of information about predation intensity in the geological past. On the basis of this "proxy" many authors evaluated the role of predation in the evolution of ancient marine ecosystems. However, criteria for reliable differentiating various skeletal damage are not clear. In addition, it is not clear if the frequency of damage is indeed a reliable "proxy" of predation intensity. It seems that these new results may have an influence on the development of basic science but could also have innovative potential, for example in bionics.