

Organisms that encrust and bore the hard substrates, collectively known as sclerobionts, are known from marine environments already since the Cambrian period. However, these organisms have started to be abundant and diverse not before the Devonian. Probably this resulted from a bloom of a diverse skeletonized benthic organisms, such as corals and brachiopods. The latter group indeed experienced a real heyday, being both very abundant and diverse on the shelves of the Devonian World. Sclerobionts, albeit small-sized, due to their calcareous (mainly calcitic) skeleton, excellently preserved in the fossil record, providing significant information about their diversity in their benthic 'microworld'. Importantly, in contrast to other benthic and nectonic organisms, sclerobionts are always preserved on place on their substrates. This means that these creatures are the best objects in paleoecological research.

These organisms also provide a number of information concerning environmental conditions prevailing in the past oceans and seas. Analyzing their abundance and diversity, we can track the changes in water salinity, sedimentation rate or even productivity. By examination of the relationship between particular sclerobionts we have opportunity for insight into the competition for space and domination in the community. The relationship between sclerobionts and their host (e.g., brachiopod) also provide interesting informations about the symbiosis: were they commensals or maybe parasites? Many of such problems concerning Devonian sclerobionts have been recognized thanks to the investigations of rich assemblages colonizing the brachiopod shells coming from different areas of the Laurussia (=Euramerica: Europe and North America) continent. Unfortunately, such assemblages from the Gondwana continent, situated south to the Laurussia, are essentially not known. Therefore, this is especially interesting to recognize the diversity of the Devonian sclerobionts, and all the problems concerning their paleoecology and paleobiology, inhabiting brachiopod shells from Gondwana continent. For this purpose, it is planned to gather a rich collection of the brachiopod shells encrusted and bored by sclerobionts in two localities in Morocco. There, the brachiopod-bearing sedimentary rocks of Middle Devonian (Eifelian/Givetian transition), originated on the northern Gondwana shelf. The researches to be conducted will allow for multi-faceted comparisons of the Gondwana sclerobionts with other assemblages already recognized in Laurussia. This, in turn, will provide the answers on relevant questions: Were sclerobiont diversities from both continents similar, and if they did, so to what degree? Which species dominated in the sclerobiont assemblages? Are there any distinct changes in the sclerobiont assemblages both in space (between localities) and time (up the section)? What were symbiotic relationships of particular sclerobionts, were they commensals or parasites? The answers on these questions will fill the gap in the knowledge about paleobiology and paleoecology of Devonian sclerobionts living in the seas at the northern margin of the Gondwana continent, and will serve as a benchmark for any other future researches of this type in other areas of this continent.