

## **DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)**

The Devonian is a crucial period concerning the development and evolution of macroflora. During the Early Devonian small vascular plants appeared in mass on the land in humid coastal environments. They belonged to already diverse homosporous plants. These plants are classified into three classes: Rhyniophytina, Zosterophyllophytina and Trimerophytina. The main objective of this study is to identify paleontological contents, mainly macroflora remains, in deposits from the Early Devonian of southern Poland.

The samples with macroflora remains will be taken from the Lower Devonian strata. It should be stressed that from the Early Devonian time primitive plants has changed very quickly into more complicated plant organisms. The evolution led to a rapid emergence of the large pragymnosperm or even gymnosperm trees in the Late Devonian. Besides important issues related to the modification of reproduction method, plants has undergone a significant change of their internal construction. At the beginning of the Devonian plants were small naked organisms, at most several dozen centimeters high, but at the end of that period their body were already huge, i.e. real tree forms of up to several meters height (e.g. *Archeopteris*). These changes may occur only through the consistent evolution of the shoot and root crops. During the Devonian plants strongly changed from small and naked into big real trees with complicated water transmission systems. Environments rich in plants created friendly ecological niches for other animal organisms. The changes associated with land plants colonization lead in consequence to global paleoenvironmental and geochemical changes. The main result of the development of land macroflora was accumulation of a large amount of biomass on the land creating a layer of proper soil acting also as a powerful reservoir of carbon. This entailed global biochemical changes and the manner and nature of the rocks weathering, which led to a significant CO<sub>2</sub> reduction and increased the amount of O<sub>2</sub> in the atmosphere. The consequence of this process could be numerous biotic crises on a global scale occurring especially at the end of the period, e.g. at the Frasnian-Famennian boundary or at the very end of the Devonian during the Hangenberg event. In summary, significant changes in the nature and character of Devonian macroflora, were not without significant repercussions which was then subjected to the entire biosphere. Undoubtedly, Early Devonian is an extremely important moment of beginning of the primitive land plants evolution.

It is worth to remember that the plants are specific group of organisms, requiring much more sophisticated environmental and taphonomical conditions to become a fossil, compared to for example animals. This is due to the absence of hard tissue, which is resistant to taphonomical processes. In higher plants hardest parts are build from compounds of lignin, cellulose or suberin. Therefore, any locality possessing plant remains should be treated in an exceptional way, especially from the Early Devonian.

Undoubtedly, the new macroflora information obtained from the Early Devonian, will supplement gaps in information from the Polish territory. A more complete recognition of Early Devonian macroflora may constitute an important element of knowledge, concerning the initial group of plants which has had a rapid evolution during the period, which led in consequence to the severe biotic crises. Moreover, the palynostratigraphy can indicate an important age of investigated samples. It is also expected to obtain some additional information about the arthropods assemblage (e.g. cuticles, fragments of carapaces), often occurring in similar coastal environments.