

## **PALEOENVIRONMENTAL CHANGES AT THE CARBONIFEROUS/PERMIAN BOUNDARY: SEDIMENTOLOGY AND PALEONTOLOGY OF LACUSTRINE DEPOSITS, THE KRKONOŠE PIEDMONT BASIN (NE BOHEMIAN MASSIF).**

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During Stephanian C and Autunian the Krkonoše Piedmont Basin was filled by relatively monotonous succession of red beds. Four fossiliferous horizons (Ploužnice, Rudník, Háje, and Kalná Horizons) of lacustrine sediments were investigated from sedimentological, geochemical, palynological, phytopaleontological and zoopaleontological points of view. The sedimentary record shows a thick succession of black shales and gravity-driven deposits along the northern margin, which gradually thin towards the central part of the basin, where suboxic, oxic low-gradient lacustrine deposits occur. Southern part of the basin is predominantly occupied by alluvial/fluvial facies. The east-west elongation of the basin with asymmetrical basin fill and facies arrangement indicates a half-graben type of the basin during the Stephanian C – Autunian interval. The subsidence was much higher along the northern steep fault-bounded basin margin in comparison to the southern low-gradient area. The fossiliferous horizons mostly correspond to extensive lacustrine sedimentation. Presence of the lacustrine sediments (including the anoxic offshore facies) within the monotonous red beds succession is not necessarily connected with substantial increase in humidity of the climate but is interpreted as a result of tectonically driven increase in subsidence rate. Alternating periods of high water level and low water level are well documented by shallowing-up facies cycles. Geochemical record (stable isotopes of calcite, organic matter, hydrogen index, trace elements in clay fraction) indicate a) a hydrologically closed system of lakes during the low-level periods; and b) fluctuation of lake level also within the lithologically monotonous offshore successions. These oscillations of the sedimentary record (in thousands and first tens of thousands of years) are interpreted as a results of climatic fluctuations.

Considerable diversity of the lacustrine fauna (including big predators) should evidence long-term convenient conditions during the deep lake period. Floristic and palynologic data indicate the global trend of reversal from the hygrophilous paludal communities (Upper Carboniferous) to the predominantly xerophilous ones (Lower Permian). We can, however, find not only xerophilous but also mesophilous and in some cases typical hygrophilous (“Stephanian”) communities during the Lowermost Permian. The hygrophilous communities were developed in providential local biotopes (e.g., in areas with high groundwater level) and its occurrence was therefore not necessarily connected with humid climatic oscillations. The “Stephanian” palynofacies could appear in the Autunian as a consequence of appropriate ecological conditions. Fossil fauna was evaluated from the following points of view: a) the relative frequency of the size categories or ontogenetic stages (particularly juvenile specimens) of the same species or the same food specialist, b) the relative frequency of big predators, c) the occurrence of the terrestrial components inside the community, d) the presence of eutrophication indicators, e) the occurrence of benthos or infauna, f) the articulated/disarticulated specimens ratio, g) the evidence of a transport of the fossils, h) the presence of size separation or preferred orientation of the fossil remains. Paleocological and taphonomic analyses of the faunal and floral assemblages enabled to distinguish various paleoenvironmental areas within the Ploužnice, Rudník and Kalná horizons. Interrelationships between the sedimentary facies and the fossil content were described and interpreted.