

IDEAS FOR A MORE OBJECTIVE ASSESSMENT OF A FOSSIL LOCALITY'S IMPORTANCE BASED ON AN EXEMPLARY NON-MARINE EARLY PERMIAN SITE AND ITS PEERS

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After Seilacher's introduction of the concept of Fossilagerstätten in 1970, palaeontologists have used the germanicism "lagerstätte" as a technical term for fossil localities and rock units whose fossil record is exceptional in its preservation quality and/or quantity. However, not all dense accumulations of fossils ("Konzentratlagerstätten") are of particular importance for the understanding of certain groups, ecosystems or evolutionary processes in the history of life, nor do all fossil localities with a high quality, fidelity or completeness of preservation ("Konservatlagerstätten") yield a fossil record, which is rich enough to make them exceptional in comparison to others. An additional dimension to the meaning of lagerstätten has been added in recent palaeodiversity studies, which consider a diversity peak due to exceptional fossil occurrences in a certain time slice as a "lagerstätte effect", which may obscure the actual diversity pattern of a group. As an alternative to the arbitrary use of the term "lagerstätte" for any fossil occurrence, which is perceived to be important in some way, and in loose agreement with Seilacher's definitions, we introduce the concept of a group- or problem-specific combined quality and quantity ranking for fossil localities and we use of a set of late Palaeozoic continental fossil sites as an exemplary sample – including the Bromacker site of the Thuringian Forest among contemporaneous fossil and ichnofossil localities. Apart from a clarification of the term "lagerstätte" and its meaning, our redefinition and classification approach may provide criteria for the choice of exceptional fossil occurrences that shall be subjected to enhanced study and protection efforts by public stakeholders.