

most likely served as shelter from seasonal or diurnal climatic extremes. Although similar burrows from Permian and Triassic red-beds (South Africa, Antarctica) have primarily been attributed to therapsids we explicitly include procolophonids as potential producers considering some unique features of the burrows and the local footprint record. Unfortunately, skeletal fossil remains, which could clarify the systematic position of the trace makers, were not yet found.

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### Freies Thema

## The horns from Ernstbrunn – Composition and palaeoecology of a Tithonian reef-associated lagoonal bivalve community

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Approximately 30 km to the north of Vienna, a series of tectonic klippen is exposed, the oldest of which are Late Jurassic in age. This area, termed the Waschberg Zone, represents a tectonic nappe bordering the Molasse and Flysch zones. Here several of these large blocks occur in a NE trending chain that starts at the major locality, i.e. Ernstbrunn, and reaches into the Zdanice Unit of the Czech Republic. The prominent hills formed by the klippen in most cases consist of the Middle to Late Tithonian Ernstbrunn Formation. This unit comprises light-coloured, partially dolomitised limestones that are primarily composed of various types of highly fossiliferous lagoonal facies, often dominated by dasycladaceans or a diceratid-nerineid association. The fossil fauna of Ernstbrunn is remarkably diverse and estimated to contain > 500 taxa. To date, only few higher taxa have been treated monographically (sponges, crustaceans, nerineid gastropods), but from these more than 200 species are identified. Bivalves, however, are among several other major invertebrate groups that are still largely unstudied. Based on a first survey of the material a total of ~ 80

bivalve species might be expected. The community is clearly dominated by diceratids (*Epidiceras* & *Diceras*), which are usually found as internal moulds of single and double-valved specimens. These fossils have been first reported in the 18<sup>th</sup> century and are well known by their informal name „Hörndln“ (= horns). Less common, but collected in large numbers from Falkenstein and karst fissures at Dörfles, are diceratids with shell preservation. Even the outer calcitic layer that shows peculiar ornamentation details is still present in some of these specimens. In fact, the quarries of Dörfles have yielded one of the most extensive and best preserved diceratid faunas of Tithonian age and thus may be regarded a prime locality for research on diceratids. Diceratid biofacies is an important Upper Jurassic facies type that has an impressive geographic range. Autochthonous occurrences are confined to shallow marine settings predominantly along the northern Tethys margin and extend from Portugal to Japan. Moreover, from a phylogenetic point of view diceratids are a highly significant group of bivalves being the basal representatives of the Hippuritida, which became important reef builders in the Cretaceous. The impressive samples from Ernstbrunn area hold great potential to address open questions in diceratid palaeoecology, functional morphology, and phylogeny by exploiting quantitative data.

The diceratids are accompanied by several abundant infaunal (*Palaeonucula*, Lucinidae, ?Veneridae) and epibenthic reclining bivalves (*Pachyrisma*, *Praeconia*, *Pterocardia*). Numerous epifaunal byssate taxa (Arcidae, Bakevelliidae, Pectinidae) occur less frequent. Presumably, the latter were attached to diceratids or corals that formed small lagoonal patch reefs, or lived in adjacent habitats.

A striking feature of the Ernstbrunn Fm. molluscs is their remarkable size. While diceratids and megalodontids are well known as large-sized taxa, and reach ~ 200 mm at maximum, even the usually small *Palaeonucula* may attain a length of more than 40 mm. A similar tendency is seen in the gastropods that include giant taxa like the > 30 cm long “*Purpuroidea*” It may thus be assumed that the organisms lived under conditions close to optimum, especially with regard to food supply.

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