

MICROPALAEONTOLOGICAL EVIDENCE OF SALINITY VARIATIONS IN THE LOWER TRIASSIC (GRIESBACHIAN) OF THE DOLOMITES

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The depositional environment of the Werfen Formation has traditionally been interpreted as a protected shallow marine bay. This assumption was based on palaeogeographical reconstructions, as well as sedimentological and palaeontological criteria, particularly on the fact that ammonoids and stenohaline benthic organisms are very rare and do not occur in pre-Spathian strata. The absence of open marine Tethyan faunal elements is most probably due to physical migration barriers and frequent environmental perturbations such as oxygen deficiency and salinity fluctuations. The occurrence of oxygen deficiency in the lower Werfen Formation (Mazzin Member) has been deduced from trace fossil patterns, abundant occurrence of pyrite and gamma ray spectrometry (Wignall & Twitchett 1996). Reduced salinity in the Griesbachian was deduced from the composition of benthic fossil associations, particularly the occurrence of monotypic shelly macrofaunas (*Lingula*, *Unionites*) in the Mazzin Member.

Micropalaeontological analysis of the Mazzin Member yielded different ostracod assemblages which strongly suggest salinity variations. A marine euryhaline ostracod fauna occurs 3 m above the Tesero Oolite in the Seis section. It consists of large and robust Paraparchitacea without spines representing 90% of the total ostracod fauna. These types of Paraparchitacea were often recorded from various late Palaeozoic littoral environments and are supposed to withstand strong salinity changes (e.g. Bless 1983, Crasquin-Soleau et al. 2005, Tibert & Scott 1999). Due to strong diagenetic carapace alteration and deformation the determination of genera and species is difficult. A preliminary taxonomical analysis suggests, however, that the Paraparchitacea are represented by at least 15 probably endemic species. The marine euryhaline character of this microfauna is additionally supported by the absence of ostracod taxa which are usually abundant in late Palaeozoic-early Mesozoic normal marine shelf environments (e.g.

Bairdiacea, Healdiacea). Completely different ostracod assemblages were recorded at 5 m and 6 m above the Tesero Oolite. These assemblages show a higher ecological diversity, although they are strongly dominated by two species of *Cavellina* and *Sargentina*. The occurrence of *Judahella* and *Neoulrichia pulchra* Kozur indicates a normal marine shallow subtidal milieu.

The present data show that ostracods are important palaeoenvironmental indicators in the Werfen Formation particularly with respect to palaeosalinity. The record of salinity fluctuations within the Werfen Formation shows that the faunal recovery pattern in the Lower Triassic of the Dolomites was not only controlled by changes of palaeo-oxygenation levels and is therefore not representative for the global marine recovery pattern as suggested by Twitchett (1999).

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