



New light on the Metacopina (Crustacea, Ostracoda) Toarcian extinction event: integrated data from the Lusitanian Basin, Portugal

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The extinction of the Suborder Metacopina (Ostracoda, Crustacea) has been rather discussed by several authors (e.g. Lord, 1982; Boomer et al., 2008). The precise age of this extinction event has been differently defined according to the various authors and geographical regions, ranging from topmost Pliensbachian to middle part of the Lower Toarcian (lowermost Falciferum =Serpentinum=Levisoni ammonite Zone).

In the Lusitanian Basin, West Portugal, Exton (1979) reported the Metacopina extinction at the end of the Pliensbachian in the Zambujal section (also known as Rabaçal). For this same section, a more recent study (Boomer et al., 1998) assigns this event to the lowermost part of the Lower Toarcian (Tenuicostatum=Polymorphum ammonite Zone).

Based on high-resolution stratigraphic analysis, including ammonite biostratigraphy and isotopic geochemistry, of the aforementioned locality and also of the Peniche reference section (GSSP candidate for the base of the Toarcian), the extinction of Metacopina in Portugal is more accurately constrained in this work. In fact, the detailed study of the ostracod fauna performed in these two sectors of the basin, clearly shows, in both sections, that the last Metacopina occurs at the top of the Polymorphum Zone. Over almost the whole of this Zone, several species of the genera *Ogmoconcha* and *Ogmoconchella* (the most important among the represented Metacopina) are recorded.

A total of 51 outcrop marl samples were collected in the Lower Toarcian (24 samples in Rabaçal, 10 from Polymorphum Zone, 14 from Levisoni Zone; 27 samples in Peniche, 11 from Polymorphum Zone, 16 from Levisoni Zone). In both sections the ostracod assemblages are more or less similar and most of the taxa (42 in Rabaçal; 38 in Peniche) have been described throughout northwestern Europe. In Polymorphum Zone the assemblages are abundant and diversified, dominated by Metacopina (at least 9 species in Peniche, 11 in Rabaçal); *Liasina lanceolata*, *Ptychobairdia hahni*, *Isobythocypris tatei* and *Ektyphocythere knitteri* are also well represented. In the Levisoni Zone, the abundance and diversity are very low. A few of the previous taxa continue (e. g. *Liasina lanceolata* and *Isobythocypris tatei*), but most of them disappear and are replaced by new genera such as *Bairdiacypris* (very abundant in Rabaçal) and *Cytherella* (only in Peniche).

Therefore, in both sections, the last occurrence of Metacopina is safely assigned to the top of the Polymorphum Zone. Moreover, this extinction is recorded immediately before the C-isotope negative excursion (Duarte et al., 2007; Hesselbo et al., 2007) associated with the early Toarcian oceanic anoxic event. In the western Iberian margin, this geochemical global event is dated from the earliest base of the Levisoni Zone.

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