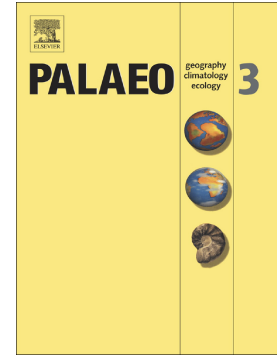


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# Changes in brachiopod body size prior to the Early Toarcian (Jurassic) Mass Extinction

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## Abstract

Herein we analyze the shell length as estimation of the body size of several brachiopod assemblages recorded into the extinction interval prior to the Early Toarcian Mass Extinction. They were collected from representative localities around the Iberian Massif (Spain and Portugal) presenting different paleoenvironmental conditions. The analysis performed has revealed two different trends of spatial and temporal changes in body size. (1) Mean size decreases in the assemblages following an anticlockwise pattern from Iberian to Lusitanian basins, in relation to the progressive environmental stress caused by shifts on terrigenous input and in depth. This diminution results from changes in the relative abundance of bigger or smaller species in each area rather than from miniaturization of the taxa. (2) Some new evolved or more resilient species show increasing sizes over time along the extinction interval. This increase affects both big spiriferinides in the Iberian Basin and small rhynchonellides and koninckinides in the Lusitanian Basin, and runs in parallel to the drop in diversity and the progressive warming of the sea water in this interval in all the localities. This increase in body size has been related to the changes in diversity that could have favored the access to resources for resilient or new evolved species. The observed patterns are comparable with those detected in the end-Permian Crisis, and might indicate a generalizable response to similar biotic crises.

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