



The early evolution and palaeogeographical radiation of the planktonic foraminifera.

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The planktonic foraminifera almost certainly evolved from benthonic ancestors in the early Jurassic. The meroplanktonic genus *Conoglobigerina*, known from south-central and eastern Europe, appears in the Bajocian and is probably derived from the even more geographically restricted *Praegubkinella*. This genus was represented by a single taxon in the earliest Toarcian but diversified after the Toarcian anoxic event. At the same level *Oberhauserella quadrilobata* Fuchs, 1967 became more inflated and there is some evidence to suggest that the 'anoxic event' was the environmental perturbation that began the transition to a planktonic mode of life. In the Callovian to Oxfordian interval the planktonic foraminifera still appear to have been restricted to a relatively limited area bounded by the North Atlantic Ocean, NW Europe and Eastern Europe. However, recent work by Marjorie Apthorpe in NW Australia has shown that very similar faunas were present in that area during the Jurassic. With no evidence from other parts of Tethys (Indian Ocean, Middle East, etc.) it is currently impossible to explain the relationship, if any existed, between these two populations. Jurassic faunas show only a very limited range of morphological characteristics and, because nearly all the taxa were initially described from Europe, few authors have considered the possibility of regional or ecological differences. It was only in the Aptian/Albian that the palaeogeographical distribution changed dramatically, probably as a response to the elevated sea levels caused by the increased rate of oceanic crust production which began in the early Aptian. The principal diversification events in the Jurassic (Toarcian, Bajocian, Callovian/Oxfordian) also appear to be related to sea level highstands.