



Upper Cretaceous oceanic red bed foraminifera from the southern Norwegian Sea

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Foraminiferal assemblages of Cretaceous Oceanic Red Beds (CORBs), which are geographically widespread and whose deposition reflects oligotrophic and well-oxygenated deep-water environments, have been described from the Atlantic, the Pacific and the Tethys. No detailed taxonomic study was, however, published on foraminifera from CORBs in the Norwegian Sea, though their existence was previously mentioned. This study, thus, investigates assemblages from a red sediment interval of the uppermost Santonian–middle Campanian Nise Formation in well 6306/5-1 drilled in the southern Norwegian Sea for taxonomy and their palaeoenvironmental implications based on morphogroup analysis.

The assemblages are relatively highly diversified and composed of 61 deep-water agglutinated taxa without any calcareous forms. Biostratigraphically important Upper Cretaceous species, such as *Caudamina gigantea* and *Uvigerinamina jankoi*, are not recorded. The common occurrence of tubular forms, high diversity and the absence of small species of Upper Cretaceous abyssal fauna suggest a bathyal setting for the depositional environment of the CORBs in the Norwegian Sea. The absence of calcareous components indicates that they were deposited near or below the regional calcium carbonate compensation depth. The fauna from the red sediment interval shows similarity to both the mesotrophic flysch-type biofacies, for example in the presence of robust tubular forms and rzehakinids, and the CORB assemblages previously described in the abundant occurrence of infauna in environments with low flux of organic matter. This intermediate characteristics of the Norwegian CORB fauna is probably related to a shallower bathyal setting and higher flux of organic matter to the seafloor due to the proximity to land in a narrow proto-Norwegian Sea than abyssal and truly oligotrophic depositional environments of other CORBs. As sedimentation of CORBs can be regarded as the primary type of background hemipelagic sedimentation in deep-sea conditions, the CORB assemblages of this study may represent a background deep-sea foraminiferal assemblage of the Norwegian Sea, which was tectonically active during the Late Cretaceous and in which a thick unit of Upper Cretaceous turbidites was deposited.