



## **Temporal (down-core) distribution of benthic foraminifera for reconstructing paleoenvironments linked to marine aquaculture**

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The present study aims to quantify the potential of benthic foraminifera for use in reconstructing paleoenvironments (pre-impacted) in areas exposed to environmental stress (accumulation of organic matter) such as those linked to marine aquaculture. This study was based on the paleontological examination of two short sediment cores, SM16-SC-02-A and SM16-SC-06-A collected from two stations directly beneath fish farming sites at Loch Creran, on the west coast of Scotland. The cores were sampled every 1 cm down to 15 cm. A total of 29 samples along the two cores (15 samples from the first core and 14 samples from the second) were analyzed to assess the temporal (down-core) changes in benthic foraminiferal distribution. The downward total organic carbon (TOC) was also determined for these two cores to relate changes in organic carbon accumulation rate with benthic foraminiferal density, as TOC is considered to be the main factor controlling the vertical distribution of benthic foraminifera (Jorissen et al., 1995).

The preliminary results indicate that a faunal shift has taken place, correlating with changes in organic carbon enrichment in the sediment. The species richness of foraminifera increases downward in both cores. Both cores reveal a downward transition from an extremely polluted environment represented by *Eggerella scabra* assemblages in the uppermost depth to a moderately polluted environment below 7 cm depth, coinciding with a marked change in sediment colour. Some *Reophax* species were found within the top 4 cm of the sediment, whereas specimens of *Ammonia beccarii* and *Ammoscalaria runiana* were dominant in the lowermost sediment in both cores. The results of this study highlight the potential of using benthic foraminifera as reliable indicators of pre-impacted marine habitat, with great potential to understand environmental history around the globe.