Geophysical Research Abstracts
Vol. 19, EGU2017-1257-2, 2017
EGU General Assembly 2017

Benthic Foraminifera As A Novel Bio-monitoring Tool In The Assessment Of Environmental Impacts Linked To Marine Aquaculture

Montaha Alammar (1) and William Austin (1,2)

(1) University of St Andrews, Scotland (ma231@st-andrews.ac.uk), (2) Scottish Association for Marine Sciences, Scotland (wena@st-andrews.ac.uk)

The present study represents an attempt to evaluate the impacts of marine aquaculture on benthic foraminiferal communities in order to develop an improved, quantitative understanding of their response to the variation in benthic environmental gradients associated with fish farms in Scotland. Furthermore, their performance as a bio-monitoring tool will be discussed and outlined in ongoing research to evaluate their performance alongside traditional bioecological indicators. Foraminiferal faunas offer the potential to assess ecological quality status through their response to stress gradients (e.g. organic matter enrichment), such as that caused by intensive fish farming in coastal sediments. In this study, we followed the Foraminiferal Bio-Monitoring (FOBIMO) protocol (Schönfeld. et al., 2012), which proposed a standardised methodology of using foraminifera as a bio-monitoring tool to evaluate the quality of the marine ecosystem and applied these protocols to the rapidly expanding marine aquaculture sector in Scotland, UK.

Eight stations were sampled along a transect in Loch Creran, west coast of Scotland, to describe the spatial and down-core (temporal) distribution pattern of benthic foraminiferal assemblages. Triplicate, Rose-Bengal stained samples from an interval of (0-1cm) below the sediment surface were studied at each station from below the fish cages (impacted stations) to a distance from the farming sites (control stations). Morphospecies counts were conducted, and the organic carbon and the grain size distributions determined. Species richness beneath these fish farming cages were analysed and showed a reduction of foraminifera density and diversity at the impacted stations.