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ABSTRACTS

MEIOFAUNA COMMUNITIES OF SÃO MIGUEL (AZORES): A CASE STUDY

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The study of Meiofauna in the Azores has long been forgotten. Just one paper addressing the matter, has been published, a review of the harpacticoid copepods.

In 1999, a project on the effects of the outlet emission of the wastewater treatment plant gave the opportunity to start a study on the local meiofauna community. Samples were made at 30m depth by corers taken by divers. Three replicates were taken at each of the following distances from the outlet: 0, 5, 10 and 30m. Samples were taken both in winter and in summer.

The control site, with similar physical characteristics of the experimental site is located several kilometres away.

Considering control site samples as representative of meiofauna communities in soft bottoms in São Miguel we may state that these are rather poor, both in number of taxa and abundance.

The results showed major difference between the outlet and the control site, namely in what regards the number of nematodes. In the outlet there is a larger number of these organisms, probably due to a possible enrichment in organic matter in the area. There are also differences in the numbers of copepods. These are more abundant near the outlet reaching values similar to the control site at 30m from the outlet. At the 30m point, the smaller number of copepods per cm^3 found approaches the values recorded at the control site. In contrast, the numbers of foraminifers seem to rise with the distance to the outlet.

Meiofauna Communities of São Miguel (Azores): A Case Study

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INTRODUCTION

The study of Meiofauna in the Azores Islands (Fig. 1) has long been forgotten. Just one paper addressing the matter, has been published, a review of the harpacticoid copepods (Kunz, 1983). In 1999, a project on the effects of the outlet emission of the wastewater treatment plant gave the opportunity to start a study on the local meiofauna community.

METHOD

Samples were made at 30m depth by corers taken by divers (Fig. 2). Three replicates were taken at each of the following distances from the outlet: 0, 5, 10 and 30m. Samples were taken both in winter and in summer. At the laboratory, the sample treatment followed Somerfield & Warwick (1996).

Statistical treatment was carried out using the Primer 5 β for Windows software and Microsoft Excel 2000. Data were analysed by non-metric multi-dimensional scaling ordination (MDS) using the Bray-Curtis similarity measure and fourth root transformed groups abundance data.

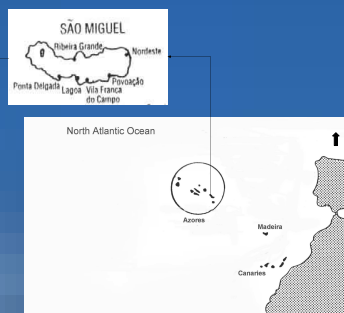


Fig. 1. Maps showing the Azores Archipelago, Island of São Miguel and sampling area.

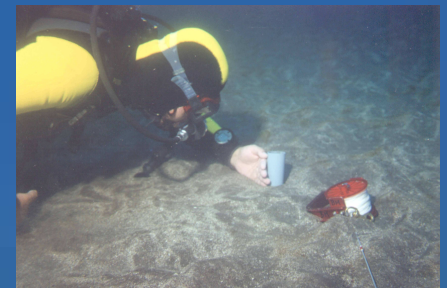


Fig. 2. Diver collecting at the sampling site.



Fig. 3. Map of Ponta Delgada showing the wastewater treatment plant outlet and sampling sites.

RESULTS AND DISCUSSION

The results showed some differences between the outlet and the control site, namely in what regards the number of foraminifers (Fig. 3). In the outlet there is a smaller number of these organisms, probably due to a possible enrichment in organic matter in the area. There are also differences in the numbers of nematods. These seem to be more abundant in the 30m site from the outlet. At the 30m site, the smaller number of copepods per cm³ found could be an indication of the positive influence of the effluent in this group, however the data from the control site does not follow this idea. The amount of copepods in the summer in the 0 m site is almost the same as in the control site.

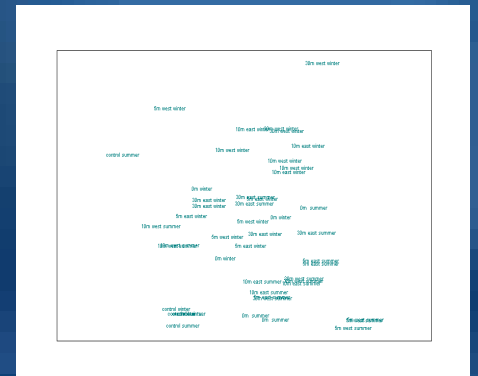


Fig. 4. Multi-dimensional scaling plot of all samples.

These data were produced while the wastewater treatment plant was not fully working and serve as a preliminary study to serve as a support for future investigation, namely when the wastewater treatment plant will be totally operational. It gave an idea of how the meiofaunal communities were established before disturbance.

The results from MDS (Fig. 4) seem to point out to a patchy distribution of the community, which goes accordingly with what it is known for these groups (Higgins & Thiel, 1988). The Bray-Curtis similarity index test (Fig.5) shows a great proximity between samples which gives the idea that the amount of disturbance caused by the outfall still as not caused a major modification in the community. That is supported by the fact that the wastewater treatment plant has not yet started to work at full power.

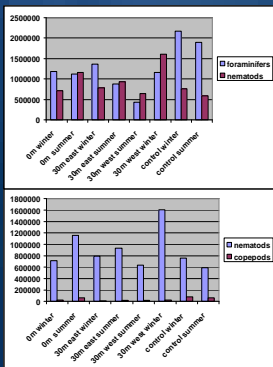


Fig. 3. Comparisons between nematods and foraminifers (top), and nematods and copepods (bottom) in four different sampling sites in both winter and summer.

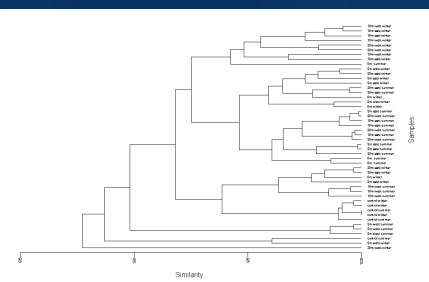


Fig. 5. Dendrogram showing the similarity index between samples.

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