

Response of free living marine nematodes to the short-term hypoxia in three different sediment types at the Belgian Part of the North Sea

Taheri Mehrshad^{1,2}, Ulrike Braeckman¹, Magda Vincx¹ and Jan Vanaverbeke¹

¹ Marine Biology Research Group, Biology Department, Ghent University, Krijgslaan 281, S8, 9000 Ghent, Belgium
E-mail: mehrshad.taheri@ugent.be; mehrshadtaheri@yahoo.com

² Iranian National Institute for Oceanography, Tehran, Iran

We investigated the effect of short-term hypoxia on nematode density, vertical distribution patterns, community structure and diversity indices (H and J) from different sediment types at the Belgian Part of the North Sea (BPNS). Sampling was carried out in stations 115bis, 700 and 330 with a Reineck boxcorer from the deck of RV Zeeleeuw. In total 90 cores (3.6 cm i.d) were taken. 18 cores were used as field control (FC). The remaining cores were moved into the laboratory. Overlying water was bubbled with N₂ to initiate hypoxic conditions and with O₂ in control treatments. Cores were sliced after 1 and 7 days.

The total nematode density in the field conditions and control treatments did not show significant difference (T test $p > 0.05$ in all stations). Also, PERMANOVA analysis only showed a significant difference ($P=0.027$) in the vertical distribution of nematode densities of station 115bis at one sediment slice. There were no significant differences between the vertical profiles on community level. This shows that sampling and keeping cores in experimental conditions did not affect the nematodes characteristics. Hence, the patterns observed in the experimental treatments could be related to the effect of hypoxic conditions.

Hypoxic conditions did not affect the total nematode density in the experiment in all stations (two way ANOVAs test $p > 0.05$ in all stations). PERMANOVA analysis only showed a significant difference ($p=0.025$) in the vertical distribution pattern of station 115bis in the first cm. In addition, nematode community composition and vertical distribution was also not affected (PERMANOVA test $p > 0.05$ in all stations). This suggests that nematode communities from different sediment types were tolerant to short-term hypoxia. This can be explained by the buffering capacity of all types of sediments, as reflected in the relatively small differences in oxygen penetration depth in most of the sediments (less than 1 cm) and adaptation mechanisms of nematodes to living in low oxygen environments.