

Abstract

Combined *in situ* and laboratory studies were conducted to document the effects of anoxia on the structure and functioning of meiobenthic communities, with special focus on harpacticoid copepods. In a first step, anoxia was created artificially by means of an underwater chamber in 24 m depth in the Northern Adriatic, Gulf of Trieste (Mediterranean). Nematodes were found as most abundant taxon, followed by harpacticoid copepods. While nematode densities were not affected by treatment (anoxia/normoxia) or sediment depth, these factors had a significant impact on copepod abundances. Harpacticoid copepod family diversity, in contrast, was not affected by anoxic conditions, only by depth. Ectinosomatidae and Cletodidae were most abundant in both normoxic and anoxic samples.

The functional response of harpacticoid copepods to anoxia was studied in a laboratory tracer experiment by adding ^{13}C pre-labelled diatoms to sediment cores in order to test (1) if there is a difference in food uptake by copepods under normoxic and anoxic conditions and (2) whether initial (normoxia) feeding of harpacticoid copepods on diatoms results in a better survival of copepods in subsequent anoxic conditions. Independent of the addition of diatoms, there was a higher survival rate in normoxia than anoxia. The supply of additional food did not result in a higher survival rate of copepods in anoxia, which might be explained by the presence of a nutritionally better food source and/or a lack of starvation before adding the diatoms. However, there was a reduced grazing pressure by copepods on diatoms in anoxic conditions. This resulted in a modified fatty acid composition of the sediment. We concluded that anoxia not only impacts the survival of consumers (direct effect) but also of primary producers (indirect effect), with important implications for the recovery phase.