

Tolerance of *Axonolaimus* nematodes to deoxygenation in a seasonally hypoxic bay (Omura Bay, Nagasaki, Japan)

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Abstract

Nematodes are the most abundant marine metazoan meiofauna and play important roles in sediment ecosystem functioning including organic matter recycling, and/ or as trophic links between the micro- and macro-benthos. Due to their physiological versatility, some groups of nematodes can be highly adapted to environmental disturbances. Among the feeding types of nematodes, non-selective deposit feeders (1B) are usually characterized by short lifecycles and a high colonization ability, and therefore often become predominant under disturbed conditions. In our previous study on the community structure of nematodes in seasonally hypoxic sediment, we found a nematode genus (*Axonolaimus*), which is classified into 1B type, dominated during summer hypoxia in an enclosed bay (Omura Bay). Although *Axonolaimus* nematodes can utilize a wide range of food resources, including bacteria and detritus, and tolerant to environmental stresses like metal pollution, little has been known about their tolerance to hypoxia. In order to gain further support for the interactions between seasonal hypoxia and *Axonolaimus* nematodes, we monitored *Axonolaimus* population under pre-, mid-, and post-hypoxia in the bay across different sampling sites. Among a total of 2,962 nematode specimens examined in 2017, *Axonolaimus* was found to be the most abundant genus in the bay. The nematodes also predominated in the southeast area of the bay, where hypoxic conditions prevail year-round. These results provide stronger additional support for the notion that *Axonolaimus* is a genus well adapted to low oxygen stress in Omura Bay.