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**The role of oxygen in the vertical distribution of nematodes: an experimental approach****M. Steyaert, S. Vandewiele, J. Vanaverbeke, L. Moodley and M. Vincx**

The role of oxygen in the vertical distribution of nematodes was investigated by means of an experiment in which different oxygen conditions were imposed on sediment from an intertidal area of the Oosterschelde (The Netherlands). To test our hypothesis that the vertical distribution of the nematode assemblages was not influenced by changing oxygen conditions (e.g. nematodes do not migrate to favourable oxygen conditions), 5 cm sediment was inverted and incubated for 5 days at the lab. In a first treatment, food (diatoms) was added to the bottom; in a second treatment oxygen and food were added to the bottom. For each case and a control treatment, fresh, well-aerated Oosterschelde water was added on top of the sediment. The analysis of the field situation showed that nematodes were the most abundant taxon. Highest densities were observed in the subsurface sediment layer (1-2 cm). The lower abundance in the oxygen and algae-rich superficial layer (0-0.5 cm) could be due to the time of sampling relative to the tides or to biotic factors (e.g. macrofaunal activity). The vertical distribution of the nematode assemblages in the experimental and control treatments proved to be significantly different. An obvious segregation existed between the nematode species assemblage from the superficial (0-0.2cm) and the deeper layers (0.2-1 cm and 4-5 cm). Characterising genera for the superficial sediment layers were *Daptonema*, *Ptycholaimellus*, *Prochromadorella* and *Microlaimus*; for the deeper layers *Terschellingia* and *Microlaimus*. The occurrence of the first species assemblage is determined by the presence of free oxygen. The second species assemblage is adapted to the reduced sediment; nevertheless, artificial addition of limited amounts of oxygen to the deeper sediment layers favoured the assemblage as higher abundances were recorded. In general, oxygen seems to be important in determining the vertical distribution of nematodes in this experiment.