

CILIATE PREDATION BY NEMATODES IN TIDAL FLAT SEDIMENTS

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The present study investigates the possibility of a trophic link between ciliates and nematodes in fine sandy sediments of the Molenplaat intertidal flat (Schelde estuary, SW Netherlands). Grazing experiments were conducted under controlled laboratory conditions, with ciliate species isolated from enrichment cultures and nematodes directly collected from the field. Significant reductions in ciliate numbers were found in the presence of the predatory nematode *Enoploides longispiculosus*, a prominent species (and genus) in fine to medium sandy sediments of the North Sea and adjacent estuaries. No such effects were found when ciliates were inoculated with a mix of mainly deposit-feeding nematodes from the same sampling site. Based on these results, ciliate predation by *E. longispiculosus* was tested for several benthic ciliate species and abundances, at a range of predator abundances and temperatures, and in the presence of alternative prey (*in casu* nematodes). *E. longispiculosus* was capable of significantly reducing densities of 5 out of 6 ciliate species offered as prey. Depending on the experimental conditions and the prey species, predation rates ranged from 0.19 to 10.8 ciliates predator⁻¹ hour⁻¹, corresponding to a biomass consumption of 0.001-0.33 $\mu\text{g C predator}^{-1} \text{ day}^{-1}$. An overall positive relation between available ciliate biomass and predation rate was found. Comparison of experimental data with field conditions suggests that a considerable part of the ciliate production in fine sandy sediments of the Molenplaat is likely to be consumed by *E. longispiculosus*, which largely dominates meiofaunal biomass there. Estimated carbon requirements for the predator and production estimates of ciliate and nematode prey at the study site, strongly suggest that ciliates are probably a far more important carbon source for *E. longispiculosus* than nematode prey, at least between late spring and autumn. This implies that carbon transfer from primary producers and bacteria to predatory nematodes may to a large extent be mediated through the microbial food web. In view of the generally high densities/biomasses of ciliates as well as predacious nematodes in fine sandy sediments, similar patterns are to be expected in many other estuarine and marine sediments.