

$\delta^{13}\text{C}$ AND $\delta^{15}\text{N}$ COMPOSITION OF SUSPENDED PARTICULAR ORGANIC MATTER (SPOM) AND ZOOPLANKTON IN THE EUTROPHIC SCHELDT ESTUARY (BELGIUM)

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$\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ were used to study food sources of zooplankton in the Scheldt Estuary. The SPOM carried by the river is a mixture of antropogenic and terrestrial detritus with associated bacteria and locally produced autotrophic organic matter.

Samples of SPOM and zooplankton were taken monthly from June 1999 to April 2000 at four stations located along a salinity gradient (0-14 ppt). We investigated the relative importance of detritus, heterotrophic and autotrophic organic matter in the diet of zooplankton.

Both $\delta^{15}\text{N}_{\text{SPOM}}$ and $\delta^{13}\text{C}_{\text{SPOM}}$ varied seasonally, paralleling the change in biomass of autotrophic organisms. Generally, phytoplankton bloom periods were characterised by high $\delta^{15}\text{N}_{\text{SPOM}}$ (maximum +12.9‰) and low $\delta^{13}\text{C}_{\text{SPOM}}$ values (minimum -31.1‰). Winter $\delta^{15}\text{N}_{\text{SPOM}}$ and $\delta^{13}\text{C}_{\text{SPOM}}$ values were characteristic for pure antropogenic/terrestrial detritus ($\delta^{15}\text{N} = +2.5‰$; $\delta^{13}\text{C} = -26.8‰$). The summer increase of $\delta^{15}\text{N}_{\text{SPOM}}$ was attributed to autotrophic consumption of NH_4^+ strongly enriched in ^{15}N due to intense nitrification. However, the seasonal pattern between the stations differed reflecting differences in the timing, duration and intensity of the phytoplankton bloom.

$\delta^{13}\text{C}_{\text{zooplankton}}$ and $\delta^{15}\text{N}_{\text{zooplankton}}$ co-varied with $\delta^{13}\text{C}_{\text{SPOM}}$ and $\delta^{15}\text{N}_{\text{SPOM}}$. The high deviation from the original $\delta^{13}\text{C}_{\text{SPOM}}$ and $\delta^{15}\text{N}_{\text{SPOM}}$ suggested selective feeding on specific components of the SPOM.