

Zooplankton grazing pressure on phytoplankton along the Scheldt continuum: importance in a restoration context

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In the pelagic, zooplankton is important as a resource for higher trophic levels, but also as a controller of phytoplankton blooms in systems.

The Scheldt river springs in the North of France and reaches the North Sea at Vlissingen (The Netherlands) after crossing Belgium. The river- estuary continuum runs through landscapes covering a diversity of land-uses, ranging from agriculture to intensive urbanization and industry.

This creates various situations in the environmental conditions (residence time, nutrient concentrations and pollutant concentrations) which are more or less favorable to the development of various zooplankton communities. In this study, we present the composition of the zooplankton communities along this gradient. Its feeding impact on the natural phytoplankton communities was measured at a number of riverine and estuarine sites and at different seasons. Natural water fractions filtered on 250 µm, containing the microzooplankton and most of the mesozooplankton community, were incubated together with water filtered on 50 µm, containing only natural suspended particulate matter. Concentrations of algal marker pigments were quantified by HPLC.

It is shown that, according to the site and the season zooplankton, community grazing pressure on the phytoplankton community varies from 6 to 50 % / day. This highlights the importance of considering conditions for zooplankton development for a number of restoration issues such as using phytoplankton and zooplankton as a water quality indicator, evaluating eutrophication risk and promoting conditions for higher trophic level development.