

THE MICROBIAL FOOD WEB IN THE ESTUARINE WATER COLUMN: A LINK OR A SINK?

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An important part of the grazing pressure on phytoplankton and bacterioplankton in the Schelde Estuary is not due to larger organisms like copepods, but to heterotrophic protists, mainly ciliates and nanoflagellates. The significance of this group for estuarine carbon and nutrient cycles and its importance as a food source for mesozooplankton (link to higher trophic levels or mainly a carbon sink through respiration?) are still subject to research. High organic loads in the estuary cause bacterial production rates that equal the primary production rate and even exceed it in some areas. As mesozooplankton seems to be selective in grazing protists rather than detritus particles, bacterivorous microzooplankton might be the main link for transfer of carbon and nutrients from bacteria to higher trophic levels. This question is addressed in a combined experimental-modelling study using stable isotope addition in enclosures. The isotope ratios in bacterial- and algal-specific PLFA (polar lipid fatty acids) are analyzed by means of GC-IRMS. Use of the same technique for the analysis of neutral or polar lipid compounds specific for heterotrophic protists will be investigated. The results of these experiments will be used in a coupled carbon-nitrogen food web model in order to estimate turnover rates of the microbial food web compounds and to investigate the carbon and nutrient cycling in the estuarine water column.

References

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