

THE ROLE OF MACROFAUNA IN THE FUNCTIONING OF A SEA FLOOR: IS THERE ANY SEASONAL, DENSITY OR FUNCTIONAL IDENTITY EFFECT?

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Macrobenthos influences rates and intensities of benthic processes. The way in which these processes are affected depends on their densities and functional characteristics in terms of sediment reworking (bioturbation and bio-irrigation). This study focuses on the importance of three different functional groups (FG) of macrobenthos in the ecosystem processes of the Western Coastal Banks area (Belgian Part of the North Sea). Macrobenthic activity depends on temperature and food availability. Therefore two lab experiments were performed: one before sedimentation of the phytoplankton bloom (spring: low food availability and temperature) and one when organic matter had been settled on the sea bottom (late summer: high food availability and higher temperatures). Single – species treatments of key-species belonging to three different functional groups were added to microcosms at three density levels (average natural, lower and very low) to account for possible density declines. These species are the bivalve *Abra alba* (FG: biodiffuser), the tube-building polychaete *Lanice conchilega* (FG: piston-pumper) and the predatory polychaete *Nephtys* sp. (FG: regenerator/gallery-diffuser).

In both winter - and summertime, *L. conchilega* had a more pronounced influence on oxygen consumption and release of nutrients out of the sediment than *A. alba* and *Nephtys* sp.. *Abra alba* appeared to be a more effective sediment reworker than *Nephtys* sp. in both seasons. In addition, ecosystem functioning (as oxygen consumption by the sediment community and bioturbation) seems to be related to animal densities. As such, a decline of densities (due to anthropogenic or natural disturbances) most probably will decrease the rates of ecosystem functioning in the Western Coastal Banks area.