

## Does microzooplankton grazing influence the fate of coccolithophores in shelf seas?

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Coccolithophores are important components of marine phytoplankton, and exert a critical impact on the global carbon cycle and the earth's climate, through the production of calcium carbonate coccoliths and bioactive gases. However, little is currently known regarding mortality rates within natural populations. During a spring cruise (April, 2015) in the Celtic Sea (NW European Shelf) and within an April bloom of *Emiliana huxleyi* we conducted classical dilution experiments, along with cellulose nitrate filters for coccolithophore enumeration and identification.

Throughout April, coccolithophore abundance increased from 6.3 – 95.6 cells/ml with net growth rates ranging from 0.04-0.25 d<sup>-1</sup>, alongside the dominance of *E. huxleyi* becoming more pronounced. Rates of mortality displayed high variability throughout spring. Within the *E. huxleyi* bloom we recorded a density of 1,986 cells/ml along with a gross growth rate of 0.29 d<sup>-1</sup>, and ~80% of daily calcite production being consumed. Lugol's counts will allow us to put these results in the context of the abundance and composition of the grazer community.

These observations will show how grazing rates by microzooplankton on coccolithophores varies throughout spring, and will help elucidate the role grazing plays in the fate of calcite in shelf seas. We will also speculate on whether the presence of coccoliths acts as a protective mechanism from microzooplankton grazing by comparing mortality rates for coccolithophores with other phytoplankton groups.

Key words: Coccolithophores, *Emiliana huxleyi*, bloom, microzooplankton grazing

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