

Population-level variation and the effect of temperature on the early life stages of the bivalve *Macoma balthica* in acidified waters

Van Colen Carl, Anna Jansson, Alice Saunier, Thomas Lacoue-Labarthe, Narimane Dorey, and Magda Vincx.

¹ Research Group of Marine Biology, Ghent University, Belgium
E-mail: carl.vancolen@ugent.be

² Åbo Akademi University, Environmental and Marine Biology, Finland

³ Littoral, Environnement et Sociétés (LIENSs), UMR 7266, CNRS–Université de La Rochelle, France

We report on recent experiments performed with embryos and larvae of the clam *Macoma balthica* that were previously shown to be vulnerable to ocean acidification. In a first experiment we reared larvae throughout their entire 3-week pelagic stage under ambient (pH 8.1) and acidified (pH 7.8) conditions, and temporal differences in food abundance that may result from differential responses of phytoplankton and clam larvae to changing oceanic conditions. Starvation of larvae during the first week enhanced the reduction in larval growth found under acidified conditions, and also enhanced the percentage of pediveliger larvae with developed shell abnormalities. Further, we demonstrate that embryos from different populations (North Sea, Gulf of Biscay, Baltic Sea) perform a different magnitude in response to declining seawater carbonate ion concentration, with the strongest decline in hatching success and size of hatched larvae observed for the Baltic Sea population. Further, while enhanced temperatures (+3°C) partly buffered the negative effect of acidification on hatching success in the two other populations, this was not found for the Baltic Sea population.