We studied the vertical distribution and reproduction of dominant neritic copepod species in the Dogger Bank area and surrounding North Sea to reveal (i) if these species are concentrated in the subsurface chlorophyll maximum layer, (ii) if the chlorophyll maximum offers superior food conditions for reproduction compared with surface waters and (iii) if the secondary production is thus higher in the frontal areas with a subsurface chlorophyll maximum. In addition, we wanted to (iv) identify the most important environmental factors determining the reproduction of neritic copepods in the North Sea. We observed a higher egg production of cultured Acartia tonsa when fed with the seston from chlorophyll maximum, but no evidence of a higher copepod abundance in this layer. Secondary production was highest at the station closest to the upwelling of new nutrients, although seasonal differences in environmental variables probably overrode the differences between frontal and stratified stations. Copepod egg production on an annual basis seemed to be best predicted by the body size and specific fatty acids, with a high egg production, but low hatching success associated with a high EPA:DHA ratio. Total secondary production of small copepods seemed mainly related to the species composition, suggesting that factors controlling abundance of specific species rather than reproduction might be more important in determining the secondary production of copepods.

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