Effects of climate-induced habitat changes on a key zooplankton species - DTU Orbit (09/11/2017)

Effects of climate-induced habitat changes on a key zooplankton species

Impacts of climate change on marine ecosystems have become increasingly apparent during the past decades. In consequence, it is necessary to study how these alterations can affect the habitat and population dynamics of key organisms. Here we used a video plankton recorder (VPR) to investigate the effect of climate-induced habitat changes on the copepod Pseudocalanus acuspes, a key species in the Baltic Sea. The VPR allowed the observation of reproducing copepod females, identified by attached egg sacs, usually lost during traditional net sampling. We compared the small-scale distribution of our target species during non-inflow and inflow periods. Our study showed a large increase in the availability of suitable habitat after the inflow event due to improved oxygen and salinity conditions. Furthermore, increased copepod abundance and a deeper and wider vertical distribution was apparent. Applying a new approach to estimate in situ egg production rates from VPR-derived images revealed no changes. However, we observed increased offspring survival with improved hydrographic conditions pointing toward the importance of salinity and oxygen for the population dynamics of Baltic P. acuspes. Our observations illustrate the strong impact that climate change can have on the habitat of key marine ecosystem species, important for overall ecosystem dynamics.

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