

Undersampled and underrated? Observing the role of marine snow in aquatic ecosystems

¹Möller Klas Ove, ²St.John Mike, ³Giering Sarah Lou Carolin and ¹Möllmann Christian

¹University of Hamburg / IHF, Grosse Elbstrasse 133, 22767 Hamburg, Germany

²Technical University of Denmark (DTU), Jægersborg Allé 1, 2920 Charlottenlund, Denmark

³National Oceanographic Centre, University of Southampton, European Way, Southampton, UK

Marine aggregates of biogenic origin, known as marine snow, are considered to play a major role in the oceans particle flux and may represent a concentrated food source for zooplankton. However, observing the marine snow–zooplankton interaction in the field is difficult, since conventional net sampling does not collect the vertical distribution of marine snow quantitatively. Hence, field evidence for the importance of the marine snow–zooplankton link is scarce. Here we employed a Video Plankton Recorder (VPR) to quantify small-scale vertical distribution patterns of fragile marine snow aggregates of different origin and zooplankton in the North Atlantic. We present data on zooplankton and particle small-scale distribution patterns during the transition from the convective winter regime to spring bloom conditions and provide indirect evidence of copepods feeding on marine snow aggregates by images suggesting a trophic interaction. Furthermore, we observed differences in sinking speeds and utilization by zooplankton due to the origin of marine snow type and size supported by data from a Marine Snow Catcher (MSC). Our observations highlight the potential significance of marine snow in marine ecosystems and its potential as a food resource for various trophic levels from bacteria up to fish.

Key words: Marine snow, Zooplankton, North Atlantic, Video Plankton Recorder (VPR), Marine Snow Catcher (MSC)

Contact author: Klas Ove Möller (klas.moeller@uni-hamburg.de)