

STUDIES IN SECONDARY PRODUCTION – COPEPOD FEEDING

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Copepods are probably the most abundant marine metazoans and constitute >90% of the total zooplankton abundance in several parts of the world's oceans. Planktonic copepods are key organisms in aquatic ecosystems, because they are the most important link between the primary productivity of microalgae and the production of many fish species in the oceans. The quantification of phytoplankton utilization by grazing allows to calculate the downward transport of organic matter. Phytoplankton are the primary processors of photoautotrophically synthesized organic matter in the oceans, and zooplankton plays major roles in the nutrient transfer to higher trophic levels. Quantifying rates of phytoplankton utilization by copepods is a necessary step to understand the mechanisms that regulate phytoplankton populations in marine ecosystems and the flux of organic matter. However, different zooplankton taxa play different roles with different impact, also in the polar environment. Copepod feeding processes cannot easily be generalized, as copepods exhibit herbivorous, omnivorous, carnivorous and detritivorous feeding habits. Quantifying rates of phytoplankton utilization by copepods is a necessary step to understand the mechanisms that regulate phytoplankton populations in marine ecosystems and the flux of organic matter. We aim to investigate the ingestion, gut content, evacuation, and clearance rates of copepods belonging to various ecological and phylogenetic groups, that are collected at the sea ice water interface and from the water column. Our objective is to understand the feeding ecology of copepods in the Arctic at different spatial (horizontal and vertical) and temporal scales (particularly, diurnal with a fine resolution of hourly intervals, and season). Gut pigment contents of copepod species will be correlated with the ambient environment (chlorophyll a concentration, seawater temperature, illumination by Pearson correlation).