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Ciliate and dinoflagellate grazing rates in Kaneohe Bay, Oahu, HI, a subtropical mesotrophic embayment

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Microzooplankton are known to be the main grazers of phytoplankton in most ecosystems. There exists a body of literature on microzooplankton community grazing rates, especially data based on the net growth of phytoplankton after incubations, however there is less data on *in situ* grazing rates of important components of the microzooplankton community, such as ciliates and dinoflagellates. This is largely due to the fragility of the ciliates upon preservation, preventing quantitative assessment of individual uptake rates. However, a recently published technique by Freibott et al. (2014, *Limnol. Oceanogr. Methods*, 12, 54-62), uses acid Lugol's and formaldehyde preservation and subsequent filtration onto black polycarbonate membrane filters for light microscope observation. The novelty of this approach is the use of an immersion oil with a refractive index matched to the polycarbonate filter itself. In the study reported here, this method was combined with additions of fluorescent prey (fluorescent beads or fluorescently-labeled cells as prey surrogates) to seawater from a mesotrophic embayment (Kaneohe Bay, Hawaii), to conduct short term grazing rate estimates by specific microzooplankton genera. Sub-samples were collected at intervals, then observed with a combination of transmitted light and epifluorescence microscopy, to visualize the ingested fluorescent tracer inside the Lugol's preserved cells. These samples were used to define ingestion curves for each main microzooplankton group present, including any mixotrophs that consumed the fluorescent prey surrogates. Results of these grazing experiments will be discussed.

Keywords: microzooplankton, grazing, ciliate, dinoflagellate

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