TAXON-SPECIFIC ANALYSIS OF MICROZOOPLANKTON GRAZING RATES AND PHYTOPLANKTON GROWTH RATES ESTIMATED FROM CHROMATOGRAPHIC PIGMENT ANALYSIS

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ABSTRACT

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Laboratory experiments were performed to test the accuracy of taxon-specific grazing and growth rates obtained by the dilution technique with HPLC. Field experiments were conducted to obtain taxon-specific estimates of microzooplankton grazing and phytoplankton growth rates in Monterey Bay, California. Seven of the nine laboratory experiments underestimated microzooplankton grazing rates. The average ratios of observed grazing rates:true grazing rates from chlorophyll a were 0.52, and 0.33 for taxon-specific pigments. Clearance rates for Oxyrrhis marina were between $2*10^{-3}$ and $7*10^{-3}$ ml grazer^{-1} day^{-1}, at initial food concentrations of approximately $5*10^{3}$ cells ml^{-1}. At higher food concentrations ($1*10^{5}$ cells ml^{-1}) clearance rates decreased to approximately $1*10^{-4}$ ml grazer^{-1} day^{-1}. Field experiments performed in September 1991, and March 1992, showed that a significant fraction (21-55%) of the phytoplankton standing stock was consumed daily by microzooplankton grazing. The laboratory experiments suggests that microzooplankton grazing rates obtained from the field may also be underestimates.

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