

## INSITU GRAZING RATE AND DIEL VERTICAL MIGRATION OF FEMALE *CALANUS EUXINUS* IN THE BLACK SEA

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Gut content and abundance of the female *Calanus euxinus* were measured from 5 layers which are defined by certain density values of the water column, with 3-5 h intervals during 30 h and 21 h at a station in the southwestern Black Sea in April and in September 1995 respectively. Female *C. euxinus* was observed to begin migration to the upper phytoplankton rich layer approximately 3 or 4 hours before sunset. There was an increasing trend in gut pigment content at night-time. In April the female *C. euxinus* fed actively only in the upper two layers of the Black Sea: from the sigma-theta = 14.6 to the thermocline and from the thermocline to the surface whilst in September they spend night time for feeding only in the first upper layer: from the thermocline to the surface. Feeding depth varied in accordance with the euphotic zone thickness during these sampling periods. The percentage of primary production grazed by the female *C. euxinus* was calculated as 43.9% in April and 7.3% in September.

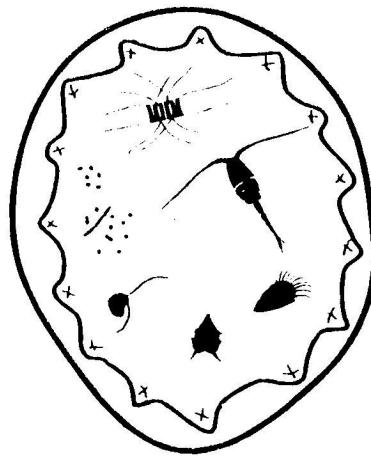
## DYNAMICS OF DISSOLVED ORGANIC CARBON IN THE EUPHOTIC ZONE IN MARINE ENVIRONMENTS

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A large part of DOC in seawater has a very long turnover, but in the euphotic zone annually produced DOC equals or exceeds the refractile portion. We have quantitated the annual accumulation of DOC in one offshore and two inshore locations, and found that the rate of DOC accumulation roughly equalled 50% of the rate of primary production. Considering that part of the DOC produced may be rapidly respired by heterotrophic activity, the net rate of accumulation is worthy of notice. We have calculated that in the Greenland Sea and the Norwegian Sea the flux of carbon through DOC is an important part of the carbon cycle with regards to the capacity for the absorption of CO<sub>2</sub> from the atmosphere. During the autumn the accumulated DOC is mixed to deeper layers. Whether or not this material is respired and returned to the atmosphere on an annual time scale is unclear at the moment, but we are presently engaged in efforts to include DOC in ocean circulation models to further verify its role in the total carbon cycle.

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