

DIEL VERTICAL MIGRATION AND FEEDING RHYTHM OF
COPEPODS UNDER SEA ICE IN SAROMA KO
LAGOON (ABSTRACT)

Hiroaki SAITO¹ and Hiroshi HATTORI²

¹*Hokkaido National Fisheries Research Institute, Katsura-koi, Kushiro 085*

²*Department of Marine Sciences and Technology, Hokkaido Tokai University,
Minami-ku, Sapporo 005*

The diel vertical migration and feeding rhythm of copepods were investigated under sea ice in Saroma Ko lagoon, Japan. The onset of upward vertical migration coincided with sunset. Migratory copepods reached the layer just below the sea ice. However, downward migration was occurred around midnight. This result shows that vertical migration was not directly related to the light cycle. On the other hand, the ingestion rate of copepods was directly related to the light cycle. The ingestion rate increased around sunset and remained higher during night time than day time. Decrease in ingestion rate was observed around the sunrise. Such a diel feeding rhythm was observed by non-migratory copepods distributed in the near-bottom layer during nighttime. Therefore, the diel change in ingestion rate was not always related to diel vertical migration.

The ratio of average ingestion rate during nighttime to daytime at each sampling layer for *Acartia* spp. was almost constant in the water column. On the other hand, the ratio for *Pseudocalanus* spp. was higher in the food-abundant shallow layer than the food-limited deep layer. Therefore, food concentration might be one of the factors influencing the diel fluctuation of ingestion rate, however, the effect of food concentration on diel fluctuation of ingestion rate varied with species.

The estimated grazing rate by zooplankton was less than 0.1% of the chlorophyll standing stock. Therefore, the role of zooplankton in chlorophyll budgets was small under sea ice in Saroma Ko lagoon.

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