MONTHLY SIZE FREQUENCY DISTRIBUTION OF *MNEMIOPSIS LEIDYI* AGASSIZ, 1865 IN THE SEA OF MARMARA

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Abstract

This study has been performed monthly at two stations in the Northern Sea of Marmara between 1997 and 1998. Results showed that abundance and biomass of *Mnemiopsis leidyi* Agassiz, 1865 increased in summer. The size frequency data indicated that small individuals were abundant through out the year, while highest increase has been observed in July-September, when water temperature was higher.

Keywords : Ctenophora, Sea Of Marmara, Biomass.

Gelatinous macrozooplankton constitute a common group of marine ecosystem. Rapid augmentation of gelatinous macrozooplankton with selective feeding [1] decreases zooplankton stocks and this interruption of food chain influence fish stocks [2]. Drastic effects of *M. leidyi* invasion have been observed at the Sea of Marmara [3]. Present study examined recruitment of *M. leidyi* abundance and biomass in relation to water temperature at the Sea of Marmara.

Vertical plankton samples were collected monthly from the upper and intermediate layers, using a Nansen closing net (1 m diameter, 500 μm mesh). The haul depth has been chosen by examining the salinity and temperature profiles recorded by a CTD system prior to the sampling. Species were immediately sorted, counted and volume of each species was measured by an Imhoff cone.

Average individual volume (AIV) and abundance of *Mnemiopsis leidyi* in relation to water temperature indicated that AIV is reduced in warm periods while abundance increased. In cold periods a reverse structure has been observed (Figure 1, 2).
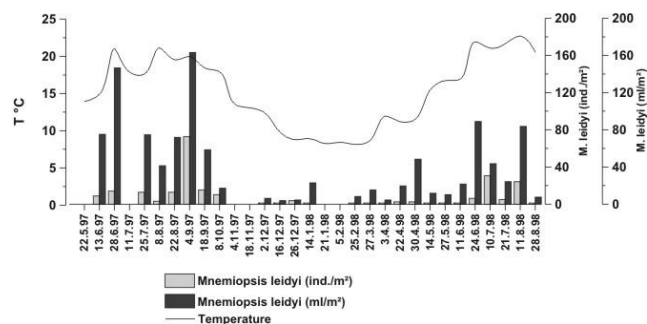

Fig. 1. Monthly changes on abundance and biomass of *M. leidyi* in relation to water temperature.

Although smaller individuals were abundant through the year, highest percentage of small individuals (0.1-0.5 ml) in samples was detected in September (47.8 %), when water temperature was the highest. Second recruitment period started in July in smaller magnitude. Another important observation is the increase in the number of large individuals prior to the months of population increase. Frequency of individuals between 3-8 ml particularly increased during these periods and the largest individual (48 ml) was detected in August 1997 (Figure 2).

Results point out that recruitment occurred in 18-25 °C water temperature in sampling area. According to periodical data, abundance of *M. leidyi* peaked in July and September (Figure 1, 2). Another important characteristic of 1997 is the lack of its predator (*Beroe ovata*) in the ecosystem.

M. leidyi abundance was higher in the upper layer in 1997. Highest abundance has been detected in September 1997 (127.4 ind.m^{-2}) and water temperature at 5 m was ∼20 °C. Although abundance increased at the intermediate layer despite of low water temperature at the upper layer,

during warm periods (17-27 °C) upper layer values were higher than the intermediate layer. This situation can be explained with reduced stocks in upper layer and some changes in ecological conditions such as increase in predators or decrease in zooplankton biomass.
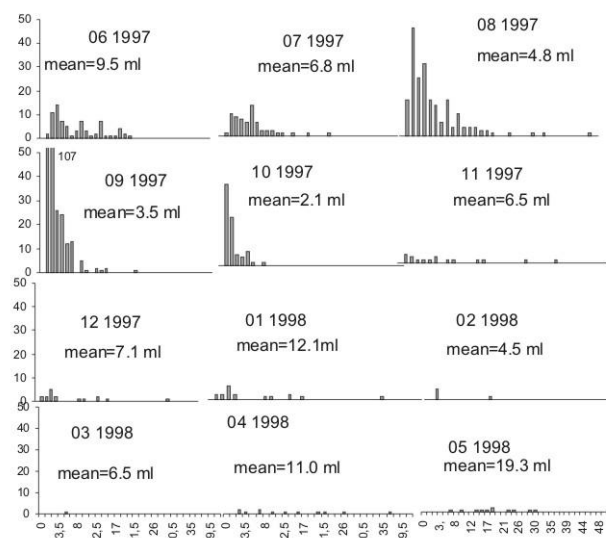

Fig. 2. Monthly size frequency distribution of *M. leidyi*.

References

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