

# SEASONAL TRENDS IN THE VERTICAL DISTRIBUTION OF COPEPODS IN THE BAY OF MALI STON (SOUTHERN ADRIATIC)

Davor LUCIC

Biological Institute, HRV - 50001 Dubrovnik, Croatia

Eleven daytime plankton samples were taken from March 1989 through July 1990 at Usko Station (N 42°40', E 18°05', 14-m depth) in the Bay of Mali Ston (Croatia). Samples were spaced at 2-m intervals with 125  $\mu$  mesh using a new type of zooplankton sampler (volume 250 l) described by KRSINIC (1990). The sampler can be efficiently used in quantitative investigations and vertical distribution of mesozooplankton in shallow waters (KRSINIC and LUCIC, 1993). The main objective of this paper is to describe potential of precise studies of copepods vertical distribution in the Bay of Mali Ston, a natural shellfish region. With regard to these first annual investigations on vertical distribution of copepods with this new tool, there are not comparisons with the other shallow regions in the Mediterranean Sea.

Of 40 copepod species identified, the calanoids *Paracalanus parvus*, *Centropages kroyeri* and *Acartia clausi* dominated. Among cyclopoids, *Oithona nana* was exceptionally dominant, followed by species of the Genus *Oncaea*. *Oithona helgolandica* and *Euterpina acutifrons* also were abundant.

Densities of copepods and copepodites were very high (Fig. 1). In spring, concentration increased toward the bottom; in April, 1989, density was 102,700 ind.m<sup>-3</sup>. In August, the vertical distribution of copepod abundance was low near the surface (ca. 10,000 ind.m<sup>-3</sup>), maximum at 8 m (56,000 ind.m<sup>-3</sup>) and intermediate at other depths (ca. 20,000 ind.m<sup>-3</sup>). With the exception of bottom layers, total abundance decreased during autumn. During winter, abundance again increased and, in February, a season maximum of 146,300 ind.m<sup>-3</sup> was recorded. An exceptionally high concentration of 120,300 m<sup>-3</sup> was also found in July 1990, at 12 m.

Differences in the vertical distribution of population density were significant (ANOVA, F=9.205, P<0.001). Surface (0 and 2 m) and mid-depth (4 and 6 m) concentrations were similar; in turn, these were different from concentrations found in deeper samples (Tab. 1).

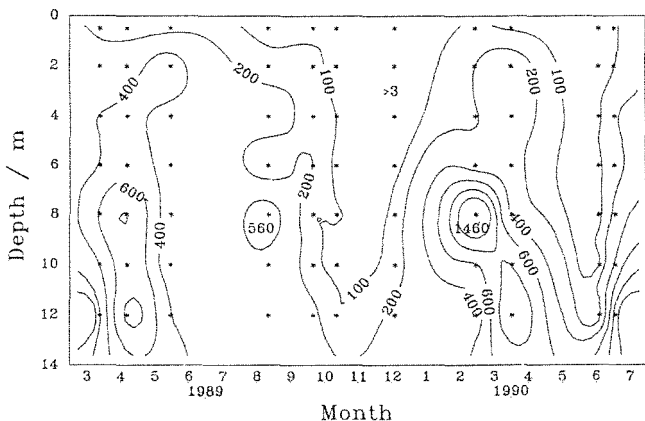


Fig.1. Distribution of copepods and copepodites (100 ind.m<sup>-3</sup>) during 1989-1990 at Usko Station, Adriatic Sea.

LAYERS	bottom - medium	MIN - MAX	X ± S.D.
surface	P<0.001 N.S.	99 - 16587	5633 ± 5133
medium	P<0.001	279 - 54270	21238 ± 14330
bottom		3195 - 146300	41362 ± 36829

Tab.1. Comparison of the total abundance of copepods and copepodites between surface (0 and 2 m), middle (4 and 6) and bottom layers (8, 10 and 12 m) at the Usko station in the Bay of Mali Ston during 1989/90 (SNK-test, \*=significant differences at 95%, N.S.=not significant).

## REFERENCES

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