

INTERSPECIFIC RELATIONSHIP BY SIZE SEGREGATION BETWEEN TWO PANDALID SHRIMPS IN THE NORTH AEGEAN SEA

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Abstract

Most of the studies on Mediterranean pandalids focused on their spatial distribution, reproduction patterns and diet but few on interspecific relationships. The present work deals with interspecific comparison between two widely distributed pandalids (*P. martia*, *P. heterocarpus*), analyzing size segregation among three different areas in the northern Aegean Sea.

Keywords : Aegean Sea, Decapoda, Crustacea, Population Dynamics, Competition.

Logarithmic decline of food energy availability in deep water is the most important factor in shaping of deep water fauna [1]. In the Mediterranean Sea, other factors such as oligotrophic water, scarce energy food availability under 200m and higher water temperatures play a main role in the organization of community structure in order to minimize inter and intra specific competition for exploitation on resources [2].

Intraspecific size segregation by depth is a common pattern in pandalid shrimps. Furthermore, among pandalid species co-occurring at the same depths different size composition and mean carapace length were observed [3]. This observation can be related to the diet composition of the species of similar morphology and trophic habits since interspecific segregation could be an adaptation that allows co-existence [4].

In this context, this study has the objective to investigate size segregation between the two most abundant and widely distributed species of pandalid shrimps in the northern Aegean Sea, *P. heterocarpus* (Costa, 1871) and *P. martia* (A. Milne Edwards, 1883).

Samplings were carried out during Mediterranean International Trawling Survey (MEDITS) in the years 2003, 2004 and 2005 in the northern Aegean Sea. Specimens were collected from samples where the two species were found co-existing. A total of 15 stations ranging between 350-600m were taken in account. Three main surveyed areas (Hios, Sporades and Halkidiki) were defined within the Medits survey protocol.

The samples were fixed on board in 10% formalin and transferred in laboratory. For each specimen, carapace length (CL) was measured from orbital edge to the median posterior margin of cephalotorax, using a vernier caliper to the nearest 0,01mm.

The variances of CL between species by each area were compared using the parametric analysis of variance (ANOVA) or the non parametric Kruskal-Wallis ANOVA by median test.

Although size overlapping was found in all three areas, significant differences between mean or median CL were observed in Hios and Halkidiki, whereas in Sporades populations didn't show size segregation in their size distribution.

At slope depths, pandalid species, where they co-occur, showed a high dietary overlap [5]. Partitioning among species has been argued to reduce interspecific competition. As feeding strategy, it has been observed that smaller species directed its feeding activities towards smaller prey items within their diets and selection of different prey sizes attenuates the exploitation of the same resource.

In this sense, different mean sizes founded in *P. heterocarpus* and *P. martia* in Hios and Halkidiki regions could be an adaptation to exploit resources in those environments where food scarce availability could determine the presence of competition as factor for resource partitioning.

Pandalids populations examined in Sporades region didn't show a significant segregation. Absence of competition could be postulate.

However, to establish presence of competition it requires determining on dietary overlap and food availability. In future, further studies should be undertaken to evaluate dietary composition of the two species and deep water resource concentration in the studied area.

References

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