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Beatriz Guijarro, Emanuela Fanelli, **Joan Moranta**, Joan E. Cartes, **Enric Massutí**, (2012). [Small-scale differences in the distribution and population dynamics of pandalid shrimps in the western Mediterranean in relation to environmental factors.](#)

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Abstract: Pandalidae is one of the most diverse families of marine shrimps. Most studies on pandalid shrimps focus on their vertical zonation, and there are few studies on their horizontal distribution and their relation to environmental factors. The aim of this paper was to study the small-scale spatial and temporal patterns of pandalid shrimps in two nearby areas off the Balearic Islands that have different environmental regimes, and determine the relationship between these patterns and the environmental conditions. Information was obtained from seasonal and annual experimental surveys. The abundance and biomass of all the pandalid shrimps caught as well as the length, weight, sex and maturity stage of the most abundant species were recorded. Environmental parameters were obtained from seasonal experimental surveys and included data on hydrography, trophic resources and sediment characteristics. Information about the trawl fleet was obtained through onboard sampling, and daily landings data were obtained from sales records. Eight pandalid species were found during the annual and seasonal experimental bottom trawl surveys carried out around the Balearic Islands. These species showed clear spatial differences in their population dynamics at the two study sites, the Algerian sub-basin (AsB) and the Balearic sub-basin (BsB), which could be related to the different environmental conditions of the two sub-basins. The relative importance of pandalid shrimps of the genus *Plesionika* in the slope crustacean communities was higher in the Algerian sub-basin. The abundances of *Plesionika martia*, *Plesionika acanthonotus*, *Plesionika giglioli* and *Plesionika antigai* were higher in the Algerian sub-basin, and only *Plesionika heterocarpus*, the most benthic species among those analysed, was more abundant in the Balearic sub-basin, where trophic webs are supported largely by suprabenthos rather than zooplankton biomass. The influence of water masses depends on the specific bathymetric distribution, and the shallowest species (*P. antigai*

) was related to the Western Mediterranean Intermediate Waters, while the deepest species (

P. martia

and

P. acanthonotus

) were related to the warmer and more saline Levantine Intermediate Waters and Western Mediterranean Deep Waters. The two species found in intermediate waters (

P. heterocarpus

and

P. giglioli

) had a deeper distribution in the Algerian sub-basin, where the layer of Levantine Intermediate Waters is wider. The mean length of

P. heterocarpus

was higher in the Balearic sub-basin, and that of

P. martia

was higher in the Algerian sub-basin. The condition index was higher in the BsB than in the AsB for both

P. heterocarpus

and

P. martia

. This could be because the BsB is influenced to a greater extent by slope fronts that increase the primary production in the area, and thus enrich the trophic chain. The condition index also showed seasonal differences, which could be related to the reproductive cycle and to the availability of potential food resources. The strong relations found between the geographical distribution of the pandalid shrimps in the Balearic Islands and the environmental variables imply that there are important differences between populations of nearby areas when the environmental conditions in which they live differ.

Keywords: Pandalid shrimps, Spatio-temporal variations, Trophic webs, Hydrography, Condition