{rokbox title=|Sampling locations of Aristeus antennatus fishery in the North Balearic Island (NBI; dots) and South Balearic Island (SBI; triangles) zones :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-influencia-clima-en-gamba-roja-carbonell-et-al-2017-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-influencia-clima-en-gamba-roja-carbonell-et-al-2017.jpg{/rokbox}

Ana Carbonell, Pere Joan Llompart, **Magdalena Gaza**, Arnau Mir, **Alberto Aparicio-González** , Diego Álvarez-Barastegui, **Rosa Balbín** , Joan Enric Cartes, 2017.

Long-term climatic influences on the physiological condition of the red shrimp *Aristeus antennatus* in the Western Mediterranean Sea.

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Abstract: Changes in the physiological condition (represented by Kn = body weight/length-predicted weight) of the deep-sea shrimp *Aristeus antennatus* associated with the warming and rising salinity trends in the western Mediterranean were analyzed to explore how deep-sea populations can reconfigure their biology to match the changes in ocean conditions. Two slope areas around the Balearic Islands (Western Mediterranean Sea) were analyzed using sampling data and generalized additive models. The 23 yr time series of monthly Kn estimates shows 2 different aspects of the life history of *A. antennatus* , corresponding to 2 different seasonal periods. The Kn series from June through September reflects the shrimps' reproductive condition to the north of the Islands, while samples from October through May represent a period of low gonad weight and high hepatosomatic indices to the south of the Islands. Oceanographic variables used to construct models and seek relationships with changes in Kn were salinity, temperature, and dissolved oxygen in the Levantine Intermediate Water and Western Mediterranean Deep Water layers, and chlorophyll a satellite imagery data. The North Atlantic Oscillation and the Eastern Atlantic index were used as climatic indicators. Physiologic condition during the winter fattening periods decreased over the time series and was negatively correlated with increasing salinity. During the summer reproductive periods, the best-fitting models show a year-on-year effect and a significant probability of effects on condition from oligotrophication. These results suggest that increasing salinity at depth, which ultimately increases oligotrophy, may cause changes in physiological condition.

Keywords: *Aristeus antennatus*, Physiological condition, Time series, Fisheries, Climate change, Western Mediterranean