

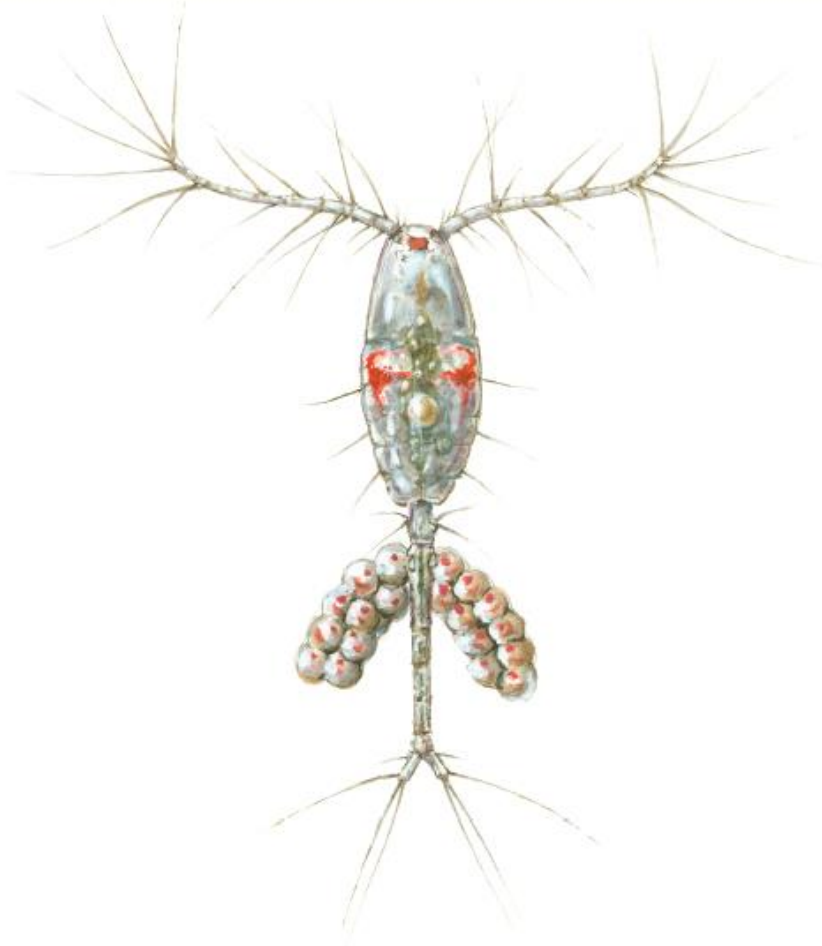
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Cover image: The copepod *Oithona similis*
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Oithona similis likes it cool: evidence from two long-term time series

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Abstract

We compare the long-term and seasonal patterns of abundance and phenology of the cyclopoid copepod *Oithona similis* at the L4 site (1988–2013) in the North Atlantic and at the LTER-MC site (1984–2013) in the Mediterranean Sea to investigate whether high temperature limits the occurrence of this species with latitudinal cline. The two sites are well suited to testing this hypothesis as they are characterized by similar chlorophyll *a* concentration (Chl *a*) but different temperature [sea surface temperature (SST)]. The abundance of *O. similis* at L4 was ~10 times higher than at LTER-MC. Moreover, this species had several peaks of abundance during the year at L4 but a single peak in spring at LTER-MC. The main mode of temporal variability in abundance was seasonal at both sites. The abundance of *O. similis* was negatively correlated with SST only at LTER-MC, whereas it was positively correlated with Chl *a* at both sites. *Oithona similis* had a temperature optimum between 15 and 20°C reaching maximum abundance at ~16.5°C at LTER-MC, but showed no Chl *a* optimum at either site. We conclude that the abundance of *O. similis* increases with prey availability up to 16.5°C and that temperature >20°C represents the main limiting factor for population persistence.

Key words time series • copepod • *Oithona similis* • temperature • Atlantic • Mediterranean
