

Geographical differences affect the seasonal succession of copepods in the southern waters of the East China Sea

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Abstract

The southern East China Sea (ECS) demonstrates fluctuations in mesozooplankton and copepod composition, which are shaped by the interaction of China Coastal water and Kuroshio water. Nevertheless, despite some local studies in northern Taiwan that have contributed to our understanding of the seasonal succession, there has been a paucity of attention paid to the geographic succession, the remaining uncertainties regarding the spatial distribution patterns of mesozooplankton taxa and diverse copepods along the northern Taiwan coastline, and the potential for further research in this area. To address this research gap, the present study collected mesozooplankton and hydrographic parameters during the prevailing southwest monsoon (August 2009), the prevailing northeast monsoon (October and November 2009), and the end of the northeast monsoon (March 2010) in Northern Taiwan. The present results enhance our understanding of the geospatial variations in the distribution patterns of dominant copepods, including the abundant species *Calanus sinicus*, *Euchaeta rimana*, *Paracalanus parvus*, *Ditrichocorycaeus affinis*, *Oithona fallax*, and *Temora turbinata*. Additionally, they delineate the seasonal distribution range of these species with the interplay waters. The research yielded a total of 22 major mesozooplankton taxa. Furthermore, a total of 77 copepod species were identified, belonging to three orders, 22 families, and 39 genera. The mean abundance of all copepods was found to range from 220.2 ± 200.3 (inds m⁻³) in October and November 2009 to 1773.3 ± 1782.1 (inds m⁻³) in March 2009. The most abundant species were: The most prevalent species were *Temora turbinata* (31.74%), *Ditrichocorycaeus affinis* (27.42%), and *Paracalanus parvus parvus* (20.38%). The abundance of 17 copepod species exhibited a significant positive correlation with seawater temperature, whereas the abundance of 5 copepod species correlated significantly negatively with seawater temperature. The results of the present study revealed that the interplay of waters influences the geospatial distribution and assemblages of mesozooplankton and copepods in the littoral zone of northern Taiwan.

Keywords: *Mesozooplankton; Copepod; Biodiversity; Seasonal succession; Biogeography; East China Sea*