

Intrusions of the Kuroshio Current in the northern South China Sea affect copepod assemblages of the Luzon Strait

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Abstract

Man-made alterations affect natural cycles for a long time. Due to the fast growing civilization and recent developments in science, technology and economics, the impact of human beings on nature has significantly increased. This holds in particular for the worlds oceans and the seas that cover two thirds of the worlds surface and surround the island of Taiwan. Here microscopic plankter play a predominant role in the transfer of matter and energy and in the global carbon circulation. The present analysis demonstrates the influence of the Kuroshio Current on planktonic copepod assemblages in the northern South China Sea. The assumption was tested whether predominant current regimes bring marine zooplankton and Copepoda from subtropical and tropical waters to the south of Taiwan. A total of 101 copepod species were identified from 26 families and 48 genera that include Calanoida, Cyclopoida, Harpacticoida and Poecilostomatoida. High copepod abundances in the study area is shown to be caused by both, a year-round Kuroshio Current intrusion and the SW monsoon, prevailing in the South China Sea during summer. *Calanus sinicus* did not appear in the samples, indicating that there was no cold water mass intrusion in the area during sampling. Both, the intrusion of the Kuroshio Branch Current to the Luzon Strait and the South China Sea circulation may play a more important role in shaping copepod assemblages in the region than hitherto expected. The abundance of copepods was higher above the 50 m isoline than at deeper strata. Species number and the Shannon-Wiener diversity index were higher with increasing depth. Copepod assemblage structure changed with different sampling depth and different sampling areas. Copepod abundance and species richness were higher in the northern South China Sea than in the Kuroshio Current area, and higher at lower latitudes than at higher latitudes. Some indicator species are characteristic for the Kuroshio Current and indicate that the study area accomodated water masses from the northern South China Sea as well as from the Kuroshio Current. Such pattern may alter with global circulation patterns influenced by climate changes. Our results are not only useful for the evaluation of man-made pollution in the future, but also for detailed prognoses of natural responses

to such influences.

Keywords: Marine plankton; Community ecology; Current Regimes; Copepoda;
Kuroshio Branch Current.