

Copepod composition as evidence of the Kuroshio Branch Current intruding into the Taiwan Strait in summer

Yang-Chi Lan¹, Ming-An Lee¹, Ding-An Lee²

1. Department of Environmental Biology and Fisheries Science, National Taiwan Ocean University, Keelung, Taiwan 202, R.O.C.

2. Fishery Research Institute, Keelung, Taiwan 202, R.O.C.

Abstract

The southwesterly monsoon prevails in summer, and forces the South China Sea Current flowing northward into the Taiwan Strait. There are opposite views about whether the Kuroshio Branch Current would intrude into the Taiwan Strait in summer. Copepods are sensitive to the hydrographic condition and are often good indicators of the movements of oceanic currents and water masses. 151 species of copepods were identified from plankton samples collected in 27 stations during a summer cruise to the Strait during August 8-22, 2004. Our sampling stations were distinguished into 2 groups, SCSG and KBG groups, based on the results of cluster analysis of the species compositions of copepods. Stations of the SCSG group located in the waters influenced by the South China Sea Current, characterized by higher copepod abundance and lower diversity and evenness in contrast to the KBG group. Dominant species in the waters of the SCSG group were *Temora turbinata*, *Undinula vulgaris*, *Paracalanus aculeatus*, *Paracalanus serrulus*, and *Canthocalanus pauper*. *Undinula vulgaris*, in particular, was a good indicator of the South China Sea Current in the Taiwan Strait in summer. Dominant species in the waters of the KBG were *Oncaea venusta*, *Cosmocalanus darwini*, *Clausocalanus minor*, *Acartia bifilosa* and *Oithona plumifera*. Copepod abundances, compositions, diversities and evenness of stations in the Penghu Channel were similar to those of the stations in the Kuroshio waters, an evidence of the intrusion of the Kuroshio Branch Current into the Strait via the Penghu Channel.

Introduction

In summer, the southwesterly monsoon prevails. Two opposite views regarding the summer intrusion of oceanic currents into the Taiwan Strait are present: (1) both KBC and South China Sea Current (SCSC) flowing into the Strait (Ninno and Emery 1961; Nitani 1972), (2) only SCSC intruding (Fan and Yu 1981; Fan 1982; Jan et al. 2002). The abundance and distribution of copepods are known to be influenced by hydrographic conditions (Boucher et al. 1987; Shih and Chiu 1998; Lan et al. 2004), and it has been suggested that they might be good biological indicator species for water masses (Zheng et al. 1992).

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