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An Ecological Study of Free-living Marine Nematodes in Teluk Awar, Sarawak, Malaysia

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ABSTRACT

The community structure of marine nematode assemblages in the southern-west of Borneo was investigated with special focus on the horizontal distribution from high tide to subtidal area. A transect study had been conducted in Teluk Awar. Nine stations were chosen from the Mean High Water Neap to Mean Low Water Neap level. The physico-chemical characteristic of water and sediments were determined both *ex situ*. One-way ANOVA showed that the environmental variables among stations were significantly different (except chlorophyll *a* and total organic matter). Multi-dimensional scaling demonstrated three distinct patterns among the stations while dendrogram showed high dissimilarity percentage in the species distribution among stations. In conclusion, the results showed that environmental variables such as clay, total organic matter and temperature were affecting the nematode distribution pattern in Teluk Awar.

Keywords: Sarawak, marine nematode, horizontal, intertidal, feeding type

INTRODUCTION

Nematodes which are sensitive to environmental perturbations have become a popular subject to study in relation to pollution. This is due to their characteristics such as occurring in large numbers, relatively stationary life habits, short generation times, benthic larvae and intimate association with sediments which are known to accumulate various contaminants, nematodes (Warwick *et al.* 1990; Warwick 1993). Most of the studies on free-living marine nematodes had been carried out in the temperate countries such as horizontal studies (Tietjen 1976; Gheskiere *et al.* 2004), ecological studies (Forster 1997; Vermeeven *et al.* 2004) and environmental pollution impact studies (Mahmoudi *et al.* 2005, 2006; Moreno *et al.* 2008). Although marine nematodes comprise a large fraction of marine benthic communities, limited information is available on their assemblages from Malaysian waters.

According to Chong (2000), Sarawak River Regulation Study identified that the water quality for Sarawak River fell short of Class IIB standard in

accordance with the Interim National Water Quality Standard (INWQS) in 1996. A comparison on the water quality of Sarawak River in 1996 and 2000 showed that there has been a significant deterioration in terms of dissolved oxygen (DO) (from 5.0 to 3.41 mg l⁻¹) and total coliform counts (from 4,500 to 16,000 counts 100 ml⁻¹). These indicate that the water is not suitable for any activities that have contact with the water. In 2005, the water quality of the Sarawak River is still categorized in Class IIB (NREB 2006).

Teluk Awar is located in Muara Tebas (Sarawak) at the South-west coast of Borneo. Teluk Awar with an area of 6.9 km² (approximately 26 km from Kuching) was chosen for the present study due to several reasons. It is located at the river mouth of the Sarawak River that brings along the excess disposal from the household or factories that are located along the river. Besides that, the distribution study of the meiofauna especially the free-living marine nematode in Teluk Awar is still scarce.

The aims of this study were to profile the horizontal distribution of the marine nematode from the high

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