ABSTRACT

The aim of this study was to assess the immediate and seasonal impacts of the operation of Coal-Fired Power Plant (CFP) on the community structure of harpacticoid copepods. Two approaches have been taken to conduct the study which involved transect sampling (impact of CFP study) conducted during September 2003 and monthly sampling (seasonal variation study), which was done from March 2003 until February 2004. Total density of harpacticoid copepods obtained from Sarawak River at Muara Tebas ranged from 10 to 245 ind./10 cm^2 (impact of CFP study) and from zero individual to 444 ind./10 cm^2 (seasonal variation study). A total of 92 species has been identified for the impact of CFP study and 111 species from the seasonal variation study. Density and distribution of the dominant species at the study area were considered to determine the characteristic of overall community of harpacticoid copepods species. Dominant species of harpacticoid copepods in overall stations from the impact of CFP study were *Enhydrosoma longifurcatum* and *Microsetella rosea.* As for the seasonal variation study, *Enhydrosoma propinquum* and *Amphiascopsis* sp.3 were found to dominate in the effluent outlet station. *Amphiascopsis* sp.3 was found to be dominant at the first control station (opposite effluent station). Several physico-chemicals factors such as temperature, chlorine concentration, pH, salinity, dissolved oxygen, total organic matter, chlorophyll *a* and sediment types have affected the community structure of harpacticoid copepods at the study areas. Impacts of the operation of Coal-Fired Power Plant are considered low and much localized within the vicinity of the effluent outlet. Several species are suggested as a bioindicator of pollution monitoring such as *Enhydrosoma longifurcatum* and *Microsetella rosea* (on-site impact), and *Enhydrosoma propinquum*, *Amphiascopsis* sp.3 and *Stenhelia* sp.3 (long term pollution monitoring).

ABSTRAK

Kajian ini adalah bertujuan untuk menilai kesan operasi Stesen Janakuasa Arang Batu (CFP) ke atas struktur komuniti kopepod harpacticoida. Dua pendekatan telah diambil dalam menjalankan kajian ini iaitu melalui transek (kajian kesan CFP) yang dijalankan pada bulan September 2003 dan kajian perubahan bermusim yang dijalankan dari bulan Mac 2003 sehingga bulan Februari 2004. Jumlah kepadatan kopepod harpacticoida yang direkodkan di Muara Tebas adalah di antara 10 hingga 245 ind./10 cm^2 (kajian kesan CFP), dan di antara kosong individu hingga 444 ind./10 cm^2 (kajian perubahan bermusim). Sebanyak 92 spesies kopepod harpacticoida telah dikenalpasti daripada kajian kesan CFP dan 111 spesies bagi kajian perubahan bermusim. Kepadatan dan taburan beberapa spesies kopepod harpacticoida yang dominan telah diambil kira untuk menentukan ciri-ciri komuniti keseluruhan spesies kopepod harpacticoida. Spesies kopepod harpacticoida yang dominan daripada kajian kesan CFP adalah <u>Enhydrosoma longifurcatum</u> dan <u>Microsetella rosea</u>. Spesies yang dominan daripada kajian perubahan bermusim adalah <u>Enhydrosoma propinquum</u> dan <u>Amphiascopsis</u> sp.3 (punca efluen). Spesies <u>Amphiascopsis</u> sp.3 ini juga adalah dominan di stesen kawalan (bertentangan dengan punca efluen). Beberapa faktor fiziko kimia seperti suhu, klorin, pH, kemasinan, oksigen terlarut, jumlah bahan organik, klorofil a dan jenis sedimen telah memberi kesan yang mendadak serta bermusim terhadap struktur komuniti kopepod harpacticoida di kawasan kajian. Kesan operasi stesen janakuasa arang batu boleh dikatakan masih rendah dan setempat iaitu terhad di kawasan yang berhampiran dengan kawasan punca efluen sahaja. Beberapa spesies yang dicadangkan sebagai penunjuk bagi pemantauan pencemaran adalah <u>Enhydrosoma longifurcatum</u> dan

*Microsetella rosea (kesan setempat) dan Enhydrosoma propinquum, Amphiascopsis sp.3 **dan** Stenhelia sp.3 (pemantauan pencemaran jangka panjang).*