UNIVERSITI PUTRA MALAYSIA

TAXONOMY AND SOME ECOLOGICAL ASPECTS OF MEIOBENTHIC HARPACTICOID COPEPODS IN COASTAL WATER OF PENINSULAR MALAYSIA

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By

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Dedication

To Hubby, Sham,

Kids,

M.Shaheed
Najeehah
Naili
M.Muhaimin

.....to whom I owe it all.....

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy.

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ZALEHA BT. KASSIM

November 2000

Chairman: **Ahmad Ismail, Ph.D.**

Faculty: **Science and Environmental Studies**

A study on the taxonomy and some ecological aspects of meiobenthic harpacticoid copepods found in coastal water of Peninsular Malaysia was conducted from June 1996 to August 1999. The taxonomic study was carried out using specimens collected from Langkawi Island, Pangkor Island, Port Dickson, Tanjung Balau, Tanjung Piai and Redang Island. A total of 40 species, representing 29 genera from 16 families of harpacticoid copepods were identified. All the 40 species were unrecorded species in Malaysian coast. For all species, description, illustration and taxonomic notes were given.

The study on some ecological aspects of meiobenthic harpacticoid copepods was carried out along Port Dickson coast. Samples were obtained from the established transects perpendicular to the sea using a transparent hand corer with the inner diameter of 3.57 cm.

Harpacticoid copepods were the second dominant group of meiobenthos found in the studied areas. They contributed between 15% to 60% to total meiobenthos found in the sediment. The density and diversity distribution of meiobenthic harpacticoid copepods along the shore was correlated significantly ($p<0.05$) with certain environmental factors, namely salinity, dissolved oxygen, percentage of silt, clay and sand, water content, ground water level, depth of brown layer and sorting type of sediment. The vertical and horizontal zonation was correlated with the concentration of chlorophyll *a* in the sediment. The horizontal zonation was also correlated with the percentage of clay. The different set of environmental factors that found to correlate with the meiobenthic harpacticoid copepod distribution in the different studied areas indicated that different beaches might have their own environmental factors that governed the distribution.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah.

TAKSONOMI DAN BEBERAPA ASPEK EKOLOGI COPEPODA HARPACTICOIDA MEIOBENTIK DI PERAIRAN PERSISIR SEMENANJUNG MALAYSIA

Oleh

ZALEHA BT. KASSIM

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Satu kajian mengenai taksonomi dan beberapa aspek ekologi Copepoda Harpacticoida meiobentik yang terdapat di perairan persisir Semenanjung Malaysia telah dijalankan mulai Jun 1996 sehingga Ogos 1999. Kajian taksonomi telah dilakukan menggunakan spesimen yang diperolehi daripada Pulau Langkawi, Pulau Pangkor, Port Dickson, Tanjung Balau, Tanjung Piai dan Pulau Redang. Sejumlah 40 spesis, mewakili 29 genera daripada 16 famili Copepoda Harpacticoida telah dikenalpasti. Kesemua 40 spesis itu adalah spesis yang belum direkodkan di perairan Malaysia. Kesemua spesis diberikan penerangan, ilustrasi dan nota-nota taksonomi.

Kajian terhadap beberapa aspek ekologi Copepoda Harpacticoida meiobentik telah dilakukan di sepanjang pantai Port Dickson. Sampel-sampel diperolehi daripada transek yang ditetapkan menganjur bersudut tepat ke arah laut menggunakan tiub transparen yang berdiameter dalamnya 3.57 cm.

Copepoda Harpacticoida merupakan kumpulan meiobentos yang kedua dominan di kawasan kajian. Mereka menyumbangkan 15% hingga 60% daripada keseluruhan meiobentos yang ditemui di dalam sedimen. Taburan kepadatan dan kepelbagaian Copepoda Harpacticoida meiobentik di sepanjang pantai didapati berkorelasi secara bererti ($p<0.05$) dengan faktor-faktor persekitaran tertentu iaitu kemasinan, oksigen terlarut, peratus kandungan kelodak, lempung dan pasir, kandungan air, aras air bawah tanah, kedalaman lapisan coklat dan jenis pengisihan sedimen. Zonasi menegak dan mendatar haiwan itu di kawasan kajian didapati berkorelasi dengan kepekatan klorofil *a* di dalam sedimen. Zonasi mendatar juga berkorelasi dengan peratus kelodak. Perbezaan set faktor-faktor persekitaran yang berkorelasi dengan taburan Copepoda Harpacticoida di kawasan kajian yang berbeza menandakan bahawa pantai yang berbeza berkemungkinan mempunyai faktor-faktor persekitarannya tersendiri yang mengawal taburan Copepoda Harpacticoida di situ.

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This thesis submitted to the Senate of Universiti Putra Malaysia has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy.

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