

QUALITATIVE AND QUANTITATIVE DISTRIBUTION OF
MANGROVE ASSOCIATED MACROBENTHIC FAUNA
(MOLLUSCS AND CRABS) FROM WATERFRONT
TO BACK MANGROVE IN TUMPAT,
KELANTAN DELTA

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back mangrove in Tumpat, Kelantan Delta / Bahar Nurddin
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ASSOCIATED MACROBENTHIC FAUNA (MOLLUSCS AND CRABS) FROM
WATERFRONT TO THE BACK MANGROVE IN TUMPAT, KELANTAN DELTA.**

By

BAHAR NURDDIN BIN MOHAMED SO'ADI

**Research Report submitted in partial fulfillment of
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**DEPARTMENT OF MARINE SCIENCE
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SCIENCE**

**DECLARATION AND VERIFICATION REPORT
RESEARCH PROJECT I AND II**

It is hereby declared and verified that this research report entitled:

Qualitative and Quantitative Distribution Of Mangrove Associated Macrobenthic Fauna (Molluscs and Crabs) From Waterfront to The Back Mangrove in Tumpat, Kelantan Delta by Bahar Nurddin Bin Mohamed So'adi, Matric No. UK15769 have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree of Science (Marine Science), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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LIST OF ABBREVIATIONS

°	-	degree
m	-	meter
mm	-	millimeter
μm	-	micrometer
%	-	percent
C	-	celcius
N	-	north
S	-	south

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ABSTRACT

The present study is to perform a survey on the qualitative and quantitative distribution of mangrove associated macrobenthic fauna (molluscs and crabs) from waterfront to the back mangroves in Tumpat, Kelantan Delta. The faunal sample were collected by hand picking and the sediment samples by hand shovel. Altogether, 19 species were encountered belonging to different group such as gastropods, bivalves, crabs and shrimp. On the whole, the *Assiminea brevicula* is the most abundance species at Tumpat mangrove, Kelantan Delta with the percentage abundance of 37.18%. Species diversity indices was calculated base on Shannon-Weiner, H' (\log_e), Evenness, J' and Margalef's richness index, d . The highest diversity of benthos is found at Transect 1 with $H'=2.04$ which exhibited $J'=0.77$, and $d=2.8$. Bray-Curtis Similarities were calculated based on species abundance (root transformed) data from 36 stations and the resulting dendrogram shows that 4 distinct benthic community groupings (at 38% similarity) could be distinguished. Mean percentage of TOC is ranging from $1.26\pm 1.05\%$ until $3.02\pm 0.96\%$ while mean percentage of silt and clay is ranging from $3.40\pm 2.09\%$ until $11.21\pm 4.83\%$. It has been observed that there is a weak significance between percentage abundance of macrobenthos and percentage of TOC in this study and there are no significance between percentage abundance of macrobenthos and percentage of silt and clay. Seasonally predictable changes in freshwater inflow, wind and tidal mixing, microalgal biomass and sediment erosion and deposition patterns all contributed to observed seasonal changes in abundance of macrobenthos in mangrove area. A few parameters such as salinity, temperature, dissolved oxygen and organic carbon should be studied to determine their relationship for the benthic community.

ABSTRAK

Penyelidikan ini adalah untuk melakukan survei terhadap taburan kualitatif dan kuantitatif berkaitan makrobentik fauna paya bakau (moluska dan ketam) dari gigi laut ke belakang hutan bakau di Tumpat, Kelantan Delta. Faunal sampel diambil dengan menggunakan tangan manakala sampel diambil dengan penyodok tangan. Secara keseluruhan, 19 spesis yang dijumpai merujuk kepada kelompok yang berbeza seperti gastropoda, bivalvia, ketam dan udang. Pada keseluruhan, *assiminea brevicula* adalah spesis yang paling limpah di hutan paya bakau Tumpat, Kelantan Delta dengan kelimpahan peratus 37,18%. Kepelbagaian jenis indeks dikira berdasarkan Shannon-Weiner, $H' (\log_e)$, Evenness, J' dan Margalef's indeks, d . Kepelbagaian tertinggi bentos ditemui di Transect 1 dengan $H' = 2.04$, $J' = 0.77$, dan $d = 2.8$. Bray-Curtis Similarity dikira berdasarkan jenis kelimpahan (root transformed) data dari 36 stesen dan keputusan dendogram menunjukkan bahawa 4 kumpulan benthic (dengan 38% persamaan) boleh dibezakan. Peratusan TOC merangkumi dari $1.26 \pm 1.05\%$ hingga $3.02 \pm 0.96\%$ sementara peratusan lumpur dan tanah liat merangkumi 3.40 ± 2.09 hingga $11.21 \pm 4.82\%$. Bahagian gigi laut dan belakang paya bakau sedikit lebih kasar daripada kawasan pertengahan. Terdapat signifikansi yang lemah pada diantara peratusan kelimpahan makrobenthos dan peratusan TOC dalam kajian ini manakala tiada signifikansi dikesan diantara peratusan kelimpahan makrobenthos dan peratusan lumpur dan tanah liat. Jangkaan perubahan musim dalam aliran air tawar, percampuran angin dan pasang surut, microalgal biomass dan hakisan enapan serta pola enapan semua berhubung bagi menentukan perubahan bermusim dalam kelimpahan makrobenthos di kawasan paya bakau. Beberapa parameter seperti saliniti, suhu, oksigen terlarut dan karbon organik perlu dikaji untuk menentukan hubungan mereka dengan komuniti benthic.