

HEAVY METAL IN *AVICENNIA SP.* AND *RHIZOPHORA SP.*
IN KERTIH MANGROVE, TERENGGANU.

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
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**HEAVY METAL IN *AVICENNIA SP.* AND *RHIZOPHORA SP.* IN KERTIH
MANGROVE, TERENGGANU.**

By

Siti Nurhidayah binti Baharin

**Research Report submitted in partial fulfillment of
the requirements for the degree of
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**DEPARTMENT OF MARINE SCIENCE
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**DECLARATION AND VERIFICATION REPORT
RESEARCH PROJECT I AND II**

It is hereby declared and verified that this research report entitled:
Heavy Metal In *Avicennia Sp.* And *Rhizophora Sp.* In Kertih Mangrove, Terengganu by
Siti Nurhidayah Baharin, Matric No 15080 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 Marine Science, Faculty of Maritime
Studies and Marine Science, Universiti Malaysia Terengganu.

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ABSTRACT

Studies conducted over the two mangrove trees *Avicennia sp.* and *Rhizophora sp.* Roots, bark and leaf were taken to determine heavy metal content and concentration value of each element is calculated. Land plant morphology also taken to examine the relevance between the content of heavy metals in plants with heavy metals content in the soil. Elements studied are Fe, Zn, Mn, Al and Cu. The main objective of this study was to determine content of heavy metals in plants and the value taken by the roots, stems and leaves. Besides, this study is to examine the relationship heavy metal content in plant and heavy metal content in soil and differences during the monsoon and before monsoon. Nowadays most of the mangrove areas near the industry zone that contributed greatly to increasing heavy metal in soil and plant that living in that area. Because the role of mangrove area as a buffer zone. Samples were taken from 5 different stations along the Kertih River. Sample taken twice before the monsoon (September 12, 2009) and during the monsoon (December 31, 2010). Result shows that *Rhizophora sp.* and *Avicennia sp.* accumulated higher concentration of heavy metals in the root system compared to bark and leaf tissue but lower than surrounding sediment level. The roots of the plants, is the first part which embedded and attached to sediment compared to stems and leaves.

ABSTRAK

Kajian dilakukan ke atas 2 spesies pokok paya bakau iaitu *Avicennia sp.* dan *Rhizophora sp.* Akar, kulit pokok dan daun diambil untuk menentukan kandungan logam berat dan kepekatan setiap elemen dikira. Morphologi tanah juga diambil untuk ditentukan hubungan yang relevan antara kandungan logam berat didalam pokok kayu bakau dan kandungan logam berat didalam tanah. Elemen yang dikaji ialah Ferum, Zink, Mangan, Aluminium dan Kuprum. Objektif kajian ini dijalankan adalah untuk mengkaji kandungan logam berat didalam tumbuhan dan nilai pengambilan oleh akar, batang dan daun. Selain itu kajian ini juga untuk menentukan hubungan logam berat didalam tumbuhan dan tanah dan perbezaannya sewaktu monsun dan sebelum monsun. Pada masa kini kawasan paya bakau terletak berhampiran kawasan perindustrian yang menyumbang kepada peningkatan logam berat didalam tanah dan tumbuhan yang hidup di situ. Ini kerana peranan kawasan paya bakau yang berfungsi sebagai zon penampan. Sampel diambil dari 5 stesen disepanjang Sungai Kertih. Sampel diambil sebanyak 2 kali iaitu sebelum monsun (September 12, 2009) dan sewaktu monsun (December 31, 2010). Keputusan menunjukkan *Rhizophora sp.* dan *Avicennia sp.* pengumpulan tertinggi kandungan logam berat adalah di bahagian akar berbanding di bahagian batang pokok dan daun tetapi masih rendah berbanding kandungan logam berat didalam tanah. Ini kerana bahagian akar merupakan bahagian pertama yang menyentuh tanah berbanding batang pokok dan daun.