

EFFECT OF EROSION SCARP ON WAVE ATTENUATION
ABILITY OF *Rhizophora sp.*

MOHD HAFIS BIN MOHD ZIN

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
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**EFFECT OF EROSION SCARP ON WAVE ATTENUATION ABILITY OF
Rhizophora sp.**

By

Mohd Hafis Bin Mohd Zin

**Research Report submitted in partial fulfillment of
The requirement for the degree of
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DEPARTMENT OF MARINE SCIENCE
FACULTY OF MARITIME STUDIES AND 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:

Effect of Erosion Scarp on Wave Attenuation Ability of *Rhizophora* sp. by **MOHD HAFIS BIN MOHD ZIN** Matric No **UK 15271** 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 Bachelor of Science (Marine Science), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

Verified by:

.....

Principal Supervisor

Name: Prof. Dr. Mohd Lokman Bin Husain

Official stamp:

Date:

.....

Second Supervisor (where applicable)

Name: Dr. Mohamad Fadhli bin Ahmad

Official stamp:

Date:

.....

Head of Department of Marine Science

Name: Dr. Razak Zakariya

Official stamp:

Date:

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LIST OF ABBREVIATIONS

Symbol	Definition
H_{in}	wave height in front of mangrove
H_{out}	wave height after passing the cage culture
ρ	specific density of water
g	gravity acceleration
H	wave height

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ABSTRACT

Mangroves are trees and shrubs that grow in saline coastal habitats in the tropics and subtropics, mainly between latitudes 25° N and 25° S. The saline conditions tolerated by various species range from brackish water, through pure seawater (30 to 40 ppt), to water of over twice the salinity of ocean seawater, where the salt has become concentrated by evaporation. Mangrove forests cover large parts of the tropical and subtropical shores in the world. The forests are the breeding grounds for sea life as fish, shrimp, prawns, crabs, shellfish and snails and also nesting sites for many shore birds as well as a home to crab eating monkeys, fishing cats, lizards, and sea turtles. Mangroves protect the coastline and prevent erosion by collecting sediment from the rivers and streams and decelerating the flow of water. Moreover, the roots, stems and canopies attenuate and dissipate wave energy, acting as a natural sea defense. Erosion scarp is one of the shore morphology. It forms by the strong wave energy hit the river bank and make erosion. The erosion made the coastline vertical like a wall that it is approximately 90 degree. The wave that pass trough erosion scarp will increase in height and automatically the energy of the wave is also increase. This is because the wave propagates from deep water into shallow water. This study is to know the effect of erosion scarp on wave attenuation ability of mangrove forest. This is very important in order to identify the factors of coastal erosion to prevent the degradation of mangrove forest. From the result, the erosion scarp helping the wave increase in height. This is because the wave that propagates from the deep water into shallow water. Erosion scarp is one of the natural creation but it also give bad impact on shoreline.

ABSTRAK

Pokok bakau adalah pokok dan semak-semak yang tumbuh di pesisir habitat di kawasan tropika dan subtropis, terutama antara garis lintang 25° N dan 25° S. Keadan kemasinan boleh ditoleransi oleh pelbagai spesis daripada air payau hingga air tawar (30-40 ppt), air lebih dari dua kali kemasinan air laut, di mana garam telah menjadi tertumpu disebabkan oleh proses pengewapan. Hutan paya bakau meliputi sebahagian besar daripada tropika dan sub-tropika. Hutan paya bakau merupakan tempat pembiakan bagi kehidupan laut seperti ikan, udang, ketam, kerang dan siput dan juga tempat bagi burung-burung pantai serta habitat ketam monyet, cicak, dan kura-kura laut. Bakau melindungi pantai dan mengelakkan hakisan dengan mengumpulkan enapan dari sungai-sungai dan aliran air. Selain itu, akar, batang dan daun menipis boleh mengurangkan tenaga ombak, bertindak sebagai pertahanan pantai. Erosi scarp adalah salah satu morfologi pantai. Erosion scarp terbentuk apabila tenaga ombak menghentam tepi sungai dan membuat hakisan menegak membuat garis pantai seperti dinding 90 darjah. Ombak yang melintas melalui hakisan cerun curam akan meningkat dan secara automatik tenaga gelombang juga meningkat. Hal ini kerana ombak melalui air dalam ke air cetek. Pembelajaran ini adalah untuk mengetahui kesan hakisan cerun curam tentang kemampuan pengurangan daya ombak oleh hutan paya bakau. Hal ini sangat penting untuk mengenalpasti faktor-faktor hakisan pantai untuk mencegah kemusnahan hutan paya bakau. Dari keputusan, hakisan cerun curam membantu peningkatan daya ombak. Hal ini kerana ombak yang menjalar dari air dalam ke air cetek. Erosi cerun curam adalah salah satu ciptaan alam semulajadi tetapi juga memberikan kesan buruk pada garis pantai.