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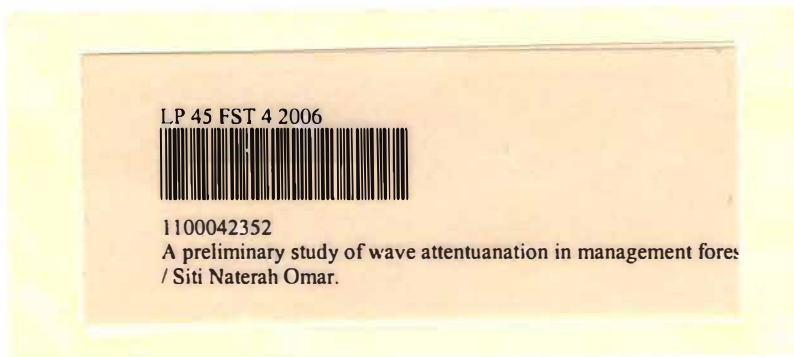
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A Preliminary Study of Wave Attenuation in Mangrove Forest

By

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Research Report submitted partial fulfillment of the requirement for the
Degree of Bachelor of Science (Marine Science).

Department of Marine Science
Faculty of Science and Technology
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RESEARCH PROJECT FINAL YEAR FINAL DRAFT APPROVAL AND
VALIDATION FORM I AND II

I certify that the report of this year project entitled as:

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ABSTRACT

Mangroves are a special form of vegetation as they exist at the boundary of terrestrial and marine environment. They have a special role in stabilizing the tropical coastal zones and as protection against the wave action. Biochemical and trophodynamic processes in the mangrove are strongly linked to water movement, due to tides and waves. A study was conducted to understand the attenuation of wave energy in mangrove forest and to determine the amount of wave energy that can be absorbed by mangrove forest. In this study, vegetation survey, profile and wave measurements were conducted in the Rizhophora forest at Sg. Kuantan. Two parameters, wave energy and significant wave height were used to measure the percentage of wave attenuation through mangrove forest. Field experiments showed the propagation of wave in mangrove forest was shallow water wave and the combined effects of drag force caused by obstructions of mangrove trunks and roots produced a significant amount of attenuation Results showed that, 94% of wave energy was dissipated in the study area. It can be concluded that mangrove forest can be as good absorber of wave energy.

ABSTRAK

Hutan paya bakau merupakan tumbuhan istimewa yang wujud di kawasan sempadan daratan dan lautan. Ianya berperanan dalam menstabilkan zon pantai dan dapat menahan tindakan ombak. Proses biokimia dan tropodinamik dalam hutan paya bakau adalah berhubung dengan pergerakan air yang berpunca daripada pasang surut dan ombak. Kajian dijalankan untuk memahami pengurangan tenaga gelombang dalam hutan paya bakau dan untuk menentukan jumlah tenaga gelombang yang boleh diserap oleh tumbuhan bakau. Dalam kajian ini, pemerhatian tumbuhan, profil dan pengukuran ombak dilakukan dalam hutan Rizhopora di Sungai Kuantan. Dua parameter iaitu tenaga gelombang dan ketinggian gelombang digunakan untuk mengukur peratus pengurangan gelombang yang melalui hutan paya bakau. Kawasan kajian menunjukkan pengurangan tenaga gelombang di hutan paya bakau adalah kawasan air cetek dan kesan tarikan tenaga kemungkinan besar disebabkan oleh penghalangan batang dan akar pokok bakau yang menghasilkan jumlah pengurangan tenaga gelombang. Keputusan menunjukkan sebanyak 94 % tenaga gelombang berkurangan di kawasan hadapan dan 96 % di kawasan belakang hutan paya bakau. Ia boleh disimpulkan yang hutan paya bakau boleh dijadikan sebagai penyerap tenaga gelombang yang baik.