

MANAGEMENT OF STATE POLICE AND BORDERS IN  
THE STATES OF PULAU PINANG, KELANTAN  
AND KEMAMAN, TERENGGANU

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INCIDENCE OF STEM DAMAGE AND DISORDERS IN MANGROVE STANDS OF  
TOK BALI, KELANTAN AND KEMAMAN, TERENGGANU

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **INCIDENCE OF STEM DAMAGE AND DISORDERS IN MANGROVE STANDS OF TOK BALI, KELANTAN AND KEMAMAN, TERENGGANU** oleh Mohamad Azerule Bin Abdul Rani, No. Matrik UK9158 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Gunaan (Pemuliharaan dan Pengurusan Biodiversiti), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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## ABSTRACT

This study was carried out to survey the incidence of stem damage and disorders that exist in mangrove stands of Tok Bali, Kelantan and Kemaman, Terengganu. A total number of 200 trees were censused which comprise of *Avicennia alba*, *Sonneratia alba*, *Rhizophora apiculata*, *Ceriops decandra*, *Kandelia candel*, *Bruguiera cylindrica* and *Bruguiera gymnorrhiza*. Tok Bali (76 cases) mangrove stands showed higher incidence of stem damage than in Kemaman (28 cases). There are significant difference between the two study sites in term of stem damage and disorders incidence, position, types and severity. In general, incidence of stem damage and disorders in mangrove could be subjected to the variety of disturbances involving the biotic and abiotic factors. However from the observation in this study, stem damage and disorders do not contribute to mangroves tree death.

## **KADAR KEJADIAN KEROSAKAN BATANG PADA DIRIAN POKOK HUTAN PAYA LAUT DI TOK BALI, KELANTAN DAN KEMAMAN, TERENGGANU**

### **ABSTRAK**

Kajian ini dijalankan bagi meninjau kadar kejadian kerosakan dirian batang pokok hutan paya laut yang terdapat di Tok Bali, Kelantan dan Kemaman, Terengganu. Sejumlah 200 batang pokok telah terlibat dalam tinjauan ini yang merangkumi *Avicennia alba*, *Sonneratia alba*, *Rhizophora apiculata*, *Ceriops decandra*, *Kandelia candel*, *Bruguiera apiculata*, *Bruguiera cylindrica* dan *Bruguiera gymnorrhiza*. Tok Bali (76 kes) menunjukkan jumlah kadar kejadian kerosakan batang pokok yang lebih tinggi berbanding di Kemaman (28 kes). Terdapat perbezaan yang ketara diantara dua lokasi kajian tersebut dalam konteks kewujudan, posisi, jenis dan darjah keterukan kerosakan batang pokok. Secara keseluruhan, kadar kejadian kerosakan batang pokok di hutan paya laut boleh dikaitkan dengan pelbagai jenis gangguan yang melibatkan faktor biotik dan abiotik. Namun demikian, dari pemerhatian yang telah dilakukan dalam kajian ini tiada kematian pokok bakau yang disebabkan oleh kerosakan batang pokok.