

CHANGE DETECTION OF MANGROVE VEGETATION USING REMOTE
SENSING IN MELANTAN DELTA, KELANTAN

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**CHANGE DETECTION OF MANGROVE VEGETATION USING REMOTE
SENSING IN KELANTAN DELTA, KELANTAN**

BY

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JABATAN SAINS SAMUDERA
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PROJEK PENYELIDIKAN I DAN II

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LIST OF ABBREVIATION

Ac-Ny	- Acanthus-Nypa
Ac-Sn	-Acanthus-Sonneratia
Arc-Hi	- Acrostichum-Hibiscus
Av	- Avicennia
Av-Sn	- Avicennia-Sonneratia
DN	- Digital Number
GCP	- Geometric Correction Point
GCPs	- Ground Control Points
IR	- Infra-red
MACRES	- Malaysian Center of Remote Sensing
MMS	- Multi-Spectral Scanner System
MSL	- Mean Sea Level
Mx-Ac	- Mix-Acanthus
Mx-Acr	- Mix-Acrostichum
Mx-Man	- Mix-Mangrove
Mx-Sn	- Mix-Sonneratia
RMS	- Root Mean Square
RSO	- Rectified Skew Orthomorphic
Sn	- Sonneratia
TM	-Thematic Mapper

ABSTRACT

Remote Sensing is a modern technology that has the ability to do mapping and classifying work for an area. This project involves the implementation of Remote Sensing methodologies to analyze the classification and changes of mangrove vegetation in Tumpat, Kelantan. This study area consists of 16 islands, which covered an area of approximately 1200 ha. For mangrove classification analysis, satellite image (Landsat TM) dated on 28th May 2000 was used. This image was processed using ERDAS version 8.5 software with band combination 4, 5, 3. There are about 10 classes of mangrove forest identified in the Kelantan Delta. These are, *Avicennia* (class 1), *Sonneratia* (class 2), *Acanthus-Nypa* (class 3), *Acanthus-Sonneratia* (class 4), *Avicennia-Sonneratia* (class 5), *Hibiscus-Acrostichum* (class 6), *Mix-Acanthus* (class 7), *Mix-Acrostichum* (class 8), *Mix-Sonneratia* (class 9) and *Mix-Mangrove* (class 10). The accuracy of the map produced is 82.93%. To determine the vegetations changes, a Landsat TM image dated on 7th August 1988 was used as a comparison with the 28th May 2000 image. Generally, the changes and classification analysis of mangrove vegetation was correctly detected by using remote sensing method.

ABSTRAK

Sistem Penderian Jarak Jauh merupakan satu teknologi moden yang mempunyai kemampuan dalam kerja-kerja pemetaan dan klasifikasi kawasan. Projek ini melibatkan implementasi methodologi Sistem Penderiaan Jarak Jauh dalam mengelaskan jenis-jenis hutan dan mengesan perubahan vegetasi yang berlaku di hutan paya bakau Tumpat, Kelantan. Kajian ini melibatkan 16 buah pulau dengan keseluruhan kawasan kira-kira 1200 hektar. Dalam menentukan kelas-kelas hutan paya bakau ini, imej satelit (Landsat TM) yang bertarikh 28 Mei 2000 telah digunakan. Imej ini diproses dengan menggunakan perisian ERDAS versi 8.5 melalui kombinasi 'band' 4, 5, 3. Sebanyak 10 kelas hutan paya bakau telah dikenal pasti di Delta Kelantan. Kelas-kelas tersebut ialah Avicennia (Kelas 1), Sonneratia (kelas 2), Acanthus-Nypa (kelas 3), Acanthus-Sonneratia (kelas 4), Avicennia-Sonneratia (kelas 5), Hibiscus-Acrostichum (kelas 6), Mix-Acanthus (kelas 7), Mix-Acrostichum kelas 8), Mix-Sonneratia (kelas 9) and Mix-Mangrove (kelas 10). Ketepatan peta yang diperolehi ialah 82.93% . Bagi mengesan perubahan vegetasi pula, imej Landsat TM yang bertarikh 7 Ogos 1988 telah digunakan untuk dibandingkan dengan imej yang bertarikh 28 Mei 2000. Secara keseluruhannya, proses mengesan perubahan vegetasi hutan paya bakau serta klasifikasinya melalui Sistem Penderiaan Jarak Jauh berjaya dilakukan dalam kajian ini.