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FAKULTI SAINS DAN TEKNOLOGI
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
2006

COMPARISON AND DISCRIMINATION IN SPECTRAL REFLECTANCE OF FIVE SELECTED MANGROVE SPECIES AT SETIU WETLAND, TERENGGANU AND KELANTAN DELTA, KELANTAN

By

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Research Report submitted in partial fulfillment of
the requirements for the degree of
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Department of Biological Sciences
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: COMPARISON AND DISCRIMINATION IN SPECTRAL REFLECTANCE OF FIVE SELECTED MANGROVE SPECIES AT SETIU WETLAND, TERENGGANU AND KELANTAN DELTA, KELANTAN oleh MUHD AZWAN B. MASSTAPAR, No. Matrik UK8247 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Gunaan (Pemuliharaan dan Pengurusan Biodiversiti), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS

cm	-	centimeter
CO_2	-	carbondioxcide
E	-	East
EMR	-	Electromagnetic Radiation
MIR	-	Middle Infra Red
mm	-	millimeter
N	-	North
NIR	-	Near Infra Red
nm	-	nanometer
α	-	alpha
°	-	degree
°C	-	degree Celcius
µm	-	micrometer
'	-	minute
≥	-	more than
≤	-	less than
%	-	percent

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ABSTRACT

The spectral signatures of the five selected mangrove species were collected *Acanthus illifolius, Avicennia alba, Bruguiera cylindrica, Nypa fruticans* and *Pandanus tectoris* were investigated to identify spectral reflectance and the best wavelength of spectral reflectance and also to determine significant waveband in discriminating among mangrove species. The spectral reflectance of mangrove species collected from mangrove habitats at Setiu Wetland, Terengganu and Kelantan Delta, Kelantan were measured in the field using a spectroradiometer during September 2005 to March 2006. The spectral reflectance among young and old plant of every species were compared between the two study sites. This study showed that mangrove species at both study sites have reflectance below 1.0%. Spectral reflectance was measured in invisible wavelength and near infra red wavelength. Strong and consistent differences in reflectance between species were recorded in the green wavelengths at 530-580 nm with additional discrimination in the regions 560–580 nm and at the 'red-edge' at 690–740 nm. *A. alba, N. fruiticans* and young *B. cylindrica* showed no significant differences among mangrove species at both study sites. Meanwhile *A. illicifolius*, *P. tectoris* and old *B. cylindrica* showed significant differences among mangrove species at both study sites.

PERBANDINGAN DAN DISKRIMINASI PANTULAN CAHAYA BAGI LIMA SPESIS BAKAU TERPILIH DI SETIU WETLAND, TERENGGANU DAN KELANTAN DELTA, KELANTAN

ABSTRAK

Dalam kajian ini bentuk pantulan cahaya pada pokok bakau seperti *Acanthus illifolius, Avicennia alba, Bruguiera cylindrica, Nypa fruticans* and *Pandanus tectoris* dikaji untuk menenalpasti pantulan cahaya dan gelombang pantulan cahaya yang tebaik bagi kelima-lima spesies pokok bakau tersebut di lokasi kajian. Selain itu, kajian bertujuan untuk menentukan perbezaan ketara band gelombang bagi membezakan antara kelima-lima pokok tersebut di dua lokasi kajian yang berbeza. Kajian ini dijalankan di Setiu Wetland Terengganu dan Delta Kelantan, Kelantan diukur di lapangan dengan menggunakan spectroradiometer dari September 2005 hingga Mac 2006. Pantulan cahaya antara pokok tua dan muda bagi setiap spesis di antara kedua-dua lokasi kajian dibandingkan. Kajian mendapati bahawa kesemua spesies yang dipilih mempunyai pantulan di bawah nilai 1.0%. Pembalikan setiap daun diukur dengan menggunakan jalur kenampakan (visible) dan jalur infra merah (infra red). Perbezan pantulan cahaya antara spesies adalah ketara pada jalur hijau pada jalur (530-580nm) dan untuk membezakan antara spesies pada jalur hijau pada (560-580nm) dan pada jalur 'red-edge' (690-740nm). Spesies *A. alba* dan *N. fruiticans* dan spesies *B. cylindrica* muda menunjukkan tiada perbezaan ketara antara dua lokasi kajian yang berbeza. Manakala spesis *A. illicifolius* and *P. tectoris* dan *B. cylindrica* tua menunjukkan terdapat perbezaan ketara antara dua lokasi kajian yang berbeza.