

UNIVERSITI TEKNOLOGI MARA

**DETERMINING THE
CHLOROPHYLL CONTENT
(CHLOROPHYLL A AND
CHLOROPHYLL B) AND MAPPING OF
Rhizophora apiculata AND *Rhizophora
mucronata* USING LANDSAT 8
IMAGERY DATA AT SELAT PULAU
TUBA, LANGKAWI.**

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Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Science (Hons.) Biology

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AUTHOR DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institutions for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Mangrove is a one of a kind woody plant network of intertidal drifts in tropical and subtropical throughout the world which experienced the losses due to the intense demand for mangrove trees which greatly benefits human activities. The aims of this study was conducted mainly to study the distribution of *Rhizophora apiculata* and *Rhizophora mucronata* species at mangrove area of Selat Pulau Tuba, Langkawi and to measure the total chlorophyll content, chlorophyll-a and chlorophyll-b content in the leaves samples of *Rhizophora apiculata* and *Rhizophora mucronata* in laboratory and their relationship with Normalized Difference Vegetation Index (NDVI) values extracted from Landsat 8 satellite imagery data. ERDAS Imagine 2014 and ArcGIS 10.2 were used to process the satellite imagery data of Landsat 8 which the overall data processes involves preprocessing of the satellite imagery data, layer stack, subset image, optimum index factor (OIF), Normalized Difference Vegetation Index (NDVI), unsupervised classification, supervised classification and accuracy assessment were done. While, the determination of chlorophyll content was determined in the laboratory. The OIF result shows the best three-band combination was 2,3,5 (Blue, Green, NIR). Meanwhile, $NDVI_{Red}$ recorded the wide range of NDVI value at -0.40 to 0.80 to help in distinguishing the vegetation and non-vegetation area compared to $NDVI_{Green}$. The classification of three main classes of *Rhizophora apiculata*, *Rhizophora mucronata* and water bodies was recorded higher using SAM with the overall accuracy resulted at 54.72%. The result of correlation shows most of the analysis have weak positive correlation between chlorophyll a, chlorophyll b and total of chlorophyll with $NDVI_{Green}$ and $NDVI_{Red}$. However, the regression analysis recorded lower for all since the value recorded in the range of 0.0007 to 0.17. In conclusion, Landsat 8 OLI satellite imagery shows capability in mapping the distribution of the *Rhizophora apiculata* and *Rhizophora mucronata* within the study area with the limited spatial resolution of 30 m.

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