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ASSESSMENT OF MANGROVE CHANNEL CHANGES
FOR LANGKAWI RIVER USING GEOSPATIAL
TECHNIQUE

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SCHOOL OF GEOMATICS SCIENCE AND NATURAL
RESOURCES COLLEGE OF BUILT ENVIRONMENT
UNIVERSITI TEKNOLOGI MARA MALAYSIA

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**Thesis submitted to the Universiti Teknologi MARA Malaysia
in partial fulfilment for the award of the degree of the
Bachelor of Surveying Science and Geomatics (Honours)**

JULY 2024

DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

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ABSTRACT

A major worry occurs in the setting of coastal mangrove ecosystems, which are of enormous ecological and socioeconomic importance, in the form of channel changes. Over time, these mangrove channels in Langkawi River have faced various environmental challenges, including urbanization, pollution, and natural changes. The aim of this study is to assess Mangrove Channel Changes for Langkawi River using remote sensing approaches for Pulau Tuba in the year 2018 and 2023. The objectives are to thoroughly examine the evolution of mangrove channels within the Langkawi River. The methodology thoroughly was, understanding of the channel changes in these locations by comparing satellite imagery data to detect the changes occur within the channel. Based on the first result, focused on classifying mangrove channels using supervised classification of Sentinel imagery. By applying geospatial techniques in Erdas Imagine 2015 and ArcMap, the study accurately identified and classified four distinct land cover types: forest, water body, mangrove, and open development. The percentage of each type is displayed in the land cover, and it is -4%, 50%, -2%, and 44%, respectively. The mangrove channel width provides the second finding, indicating that the maximum rate of erosion is 65 meters, and the minimum rate is 0.09 meters. Additionally, there are accretions with a minimum rate of 0.85 and a maximum rate of 26.7 meters. The risk analysis map for changes to the mangrove channel in 2024 represents the final findings. These results have potential applications in monitoring and planning for future years, as well as benefiting organizations such as LADA, JUPEM, and NAHRIM.

Keyword: Coastal mangrove ecosystems, ecological importance, channel changes, Langkawi River, Mangrove Channel Changes, remote sensing, Pulau Tuba, geospatial techniques.

TABLE OF CONTENT

CHAPTER	TITLE	PAGE
	CONFIRMATION BY PANEL OF EXAMINERS	I
	DECLARATION	II
	ABSTRACT	III
	ACKNOWLEDGEMENT	IV
	TABLE OF CONTENT	V
	LIST OF FIGURES	VII
	LIST OF TABLES	IX
	LIST OF ABBREVIATIONS	X
1	INTRODUCTION	
	1.1 Background of Study	1
	1.2 Problem Statement	3
	1.3 Aim and Objectives	3
	1.4 General Methodology	4
	1.5 Scope of Study	4
	1.5.1 Study Area	4
	1.6 Limitations	7
	1.7 Significance of Study	8
	1.8 Organization of Chapter	8
	1.9 Summary	
2	LITERATURE REVIEW	
	2.1 Introduction	11
	2.2 Mangrove Ecosystem for Langkawi River	12
	2.2.1 Mangrove Degradation in Malaysia	12
	2.3 The Characteristic of Mangrove	14
	2.3.1 Mangrove Channel	14
	2.3.2 Stakeholder Adaptive	16
	2.4 Mangrove Channel Overview	18
	2.4.1 Factor – Factor of Channel Changes in Malaysia	18
	2.4.2 Boating Frequency	21
	2.4.3 Effect of Channel Changes to Mangrove along Langkawi River	22
	2.5 Application of Geospatial on Mangrove Channel	24
	2.5.1 Supervised Classification for Land Use and Land Cover	24
	2.5.2 Accuracy Assessment of Mangrove Channel	28
	2.6 Satellites Images for Mangrove Channel	29
	2.6.1 Landsat	31
	2.6.2 Sentinel	31
	2.6.3 Spot 5	31
	2.7 Summary	32