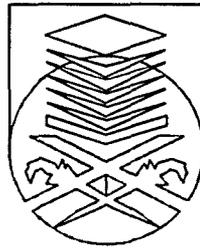


**COMPARATIVE STUDY OF PIXEL-BASED AND
OBJECT-BASED IN MONITORING BENTHIC
CLASSIFICATION**

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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 2020

DECLARATION

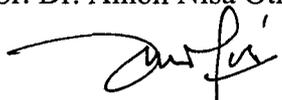
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ABSTRACT

Benthic classification mapping is inefficient, and very expensive using traditional ground base method. However, the availability of free access and commercial satellite imagery with a range of spatial resolution is an opportunity for the application of remote sensing technology. Diversity of coral reefs has been degrading rapidly throughout the last decade, so it is very important for an accurate map to use for the distribution, management and monitoring of coral reefs. The study proposes in monitoring benthic classification using medium and high-resolution satellite imagery. Sentinel 2B as medium resolution (10 m) and SPOT 7 as high resolution (1.5m) satellite imagery were used to monitor coral reef using pixel-based and object-based classification method where the Sentinel 2 downloaded from USGS website and SPOT 7 from MYSA. Both satellite imageries offer a specification of potential value toward several objectives in remote sensing in coral reefs. Benthic classification is a unique challenge in remote sensing and highly heterogeneous in the meter and occurs at varying depths and clarity regimes. Both pixel-based used Maximum Likelihood method and object-based classification was used as an approach of Nearest Neighbour (KNN) method using segmentation before the classification. The result showed, the overall accuracy on the pixel-based classification method for Sentinel 2 and SPOT 7 was 97.5% and 90%. While for object based, the result was 87.05% for SPOT 7 imagery and 82.81% for Sentinel 2 imagery. This study suggests pixel-based classification technique provides better overall accuracy than object based and can be used for benthic classification in Mabul Island. However, it is necessary to conduct a more detail assessment at different water depth and field survey.

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TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	ABSTRACT	iii
	ACKNOWLEDGEMENT	iv
	TABLE OF CONTENTS	v
	LIST OF FIGURES	viii
	LIST OF TABLES	x
	LIST OF ABBREVIATIONS	xi
1	INTRODUCTION	
	1.1 Background of Study	1
	1.2 Problem Statement	2
	1.3 Aim and Objectives	3
	1.3.1 Aim	3
	1.3.2 Objectives	3
	1.4 Scope of study	3
	1.5 General Methodology	4
	1.6 Organization of Chapter	6
2	LITERATURE REVIEW	
	2.1 Introduction	7
	2.2 The Definition of Coral Reef	7
	2.2.1 Coral Reef Issue in Malaysia	9
	2.3 Overview of Remote Sensing	11
	2.3.1 Types of Remote Sensing	12
	2.4 Benthic Habitat Mapping	13
	2.4.1 Type of Classification Scheme	14
	2.5 Pixel-Based Image Analysis	15