

UNIVERSITI TEKNOLOGI MARA

**THE STUDY OF CERAMIC
ARTIFICIAL REEF STRUCTURE
DESIGN CONCEPT**

NUR SYASYA NADIAH BINTI MOHD ROZALI

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ABSTRACT

Coral reefs are among world's most biodiverse yet most threatened ecosystems, important to both marine species and humans. These ecosystems have been dwindling due to natural and human activity. Researchers make several observations to create a potential artificial coral to help and protect the remaining coral. This, would probably be excluded from some procedures and materials, as well as being constrained by time and experience. While modern technology has been introduced to help these issues, the capabilities for designing artificial coral are insufficient. This paper aims to identify the possible project that are safe for the ecosystem. The researcher proposes that the existing artificial coral can be expanded with material studies that are far economical, using a different concept form that is more convenient, smaller in size and based on the Honeycomb concept. The research findings will be conducted by agencies to identified the materials used. Meanwhile the design will be collected from student's sample group as design brief. Since the researcher have experience from a ceramic background, the project will be study more on ceramic material. It is hope that the research would aid in the improvement of existing coral reefs to be held in the artificial project.

Keywords: Artificial Coral Reefs, Ceramic, Honeycomb Concept

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Researchers have spent the past few years figuring out the best material to use when creating artificial coral. The investigation was carried out by building a comparable function for marine environments. The controversy of the effectiveness of ARs to mimic the natural reefs, and the benefits versus negative impacts, is an issue not to be resolved in the short term (Chuang et al., 2008). In aquatic environments, a popular approach toward habitat enhancement is the introduction of underwater human-made structures which is the creation of artificial reefs (Paxton et al., 2020). Artificial reefs, also known as enhanced aquatic habitats, could be used to rehabilitate natural reef regions damaged (Perkol-Finkel et al., 2006) or provide a rigid substrate in areas where one does not naturally exist, thereby enhancing the marine ecosystems.

Artificial reefs have the potential to reduce the amount of user strain placed on natural reef communities. Therefore, for various reasons, the process of exploring artificial reefs has been scrutinized. As a result, researchers worldwide have concluded that artificial reefs are an effective means of aggregating fish, as it has been demonstrated that different reef designs attract certain types of valuable marine species (Hower,1998). In addition, an artificial reef might be tailored to raise specific fish or invertebrate populations that would best enhance the coastal economy of a particular geographic location (Neely et al., 2021).

However, when it attains to constructing an artificial reef, the type of marine species, project scale and design are frequently discussed without knowing how to think about appropriate materials and how to deal with any technical issues that may arise. On the concerns that stand out with materials capable of making an impact, there are a relatively restricted number of researches and reports available to complete the project safely. This data has been taken from research observations and readings where there is not much research that would explain the potential material that will be used in artificial coral reefs.