UNIVERSITI TEKNOLOGI MARA

ADVANCED *WALET* SCAFFOLDING NEST DESIGN USING MODIFIED HIGH TEMPERATURE STONEWARE

SYAZA ABDUL RAHIM

Thesis submitted in fulfillment
of the requirements for the degree of
Master of Art and Design

Faculty of Art and Design

June 2014

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and the result 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 institution for any degree or qualification.

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

Name of student	:	Syaza Abdul Rahim
Student I.D No.	:	2011107847
Programme	:	Master of Art and Design
Faculty	:	Art & Design
Thesis Title	:	Advanced *Walet* Scaffolding Nest Design using Modified High Temperature Stoneware
Signature of student	:	.....
Date	:	June 2014

ABSTRACT

Edible bird nest (EBN) known as the nests of Aerodramus Fuciphagus species *(Walet)* is built entirely from threads of their saliva, and normally it was collected for the famous Chinese delicacy bird's nest soup. In the market, EBN price grade by its form and size. From the reviewed work, it was discovered that the young *Walet* are not able to build nest by their own. This led to an odd form that reduced its commercial values. Hence this was undertaken to introduce as- guide form to the young *Walet* to build a typical form that will increase its commercial values. Furthermore, the quality of EBN degraded due to the artificial surrounding. The existing scaffolding nest materials used plastic and silicon are not in standard size and gave negative effects on human health. Hence, the substitution of the existing scaffolding nest materials with nature materials may attract and create the natural habitat of *Walet* and increase the productivity of EBN. In this study, the design of the natural scaffolding nest was explored and it was determined that the form of the scaffolding has to be in the concave form for the ease of *Walet* saliva deposition. The study on scaffolding nest materials was performed systematically and it was determined that the stoneware body with the composition of 30% calcium carbonate as fired at 1100°C/0.5h was finally used as scaffolding nest materials. The highest strength and water absorption are 16.94 N/mm2 and 24.67 %, respectively. Finally, the form of scaffolding nest was alike the natural supporter in limestone cave with guideline by MS 2334 (2011). The hook design also enhanced in order to adapt with ceramic materials brittleness. The modified stoneware scaffolding nest was successful installation in the *Walet* house. The finding of this modified stoneware scaffolding nest will growth the productivity of the EBN hence it will increase the income of entrepreneur.

ACKNOWLEDGEMENT

First and foremost may I praise Allah S.W.T the most merciful and loving for His gift of joy, patience, perseverance and serenity in completing my research journey.

First of all, I would like to give my sincere thanks to my principle supervisor, Dr. Ing. Oskar Hasdinor Hassan. With my little experience in research, he has guided me patiently and offered so much advice in completing and amending my thesis. There were hiccups along the way but without his help I could not have finished my dissertation successfully. I would also like to thank my co-supervisor, Mr. Rusmadiah Anwar who had provided intelligent suggestions to improve the quality of this dissertation and has support this study under the ERGS and RAGS grant as reference 600-RMI/ERGS5/3(75/2012) and 600-RMI/RAGS5/3(200/2012). Special thanks to Associate Professor Abdul Rahim Jalil for giving me the opportunity to work on this interesting research and for encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the research.

I wish to thank the Ministry of Education (formally known as Ministry of Higher Education) for the SLAB/ SLAI award include the provision of the UiTM Young Lecturer Scheme Scholarship. My gratitude goes out also to Dean of Faculty of Art and Design, Prof. Dr. Hj. Mustaffa Halabi Hj. Azahari and head of Industrial Ceramic Department, Mr. Zuraidy Abd Rahim for the resources and facilities provided. I would also like to thank my colleagues and friends in the Formgiving Design Research Lab for their endless and tireless encouragements.

Finally, I would like to express my deepest gratitude and appreciation to my husband, Mohd Azwan Mohd Zailan and my son, Muhammad 'Afif Syazwan for their support, encouragement, understanding, tolerance, and sacrifices made during my study period. I am also greatly indebted and appreciate very much to my beloved father, mother, brother and my sisters, big thanks for their support and encouragement.

TABLE OF CONTENT

	Page
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER ONE: INTRODUCTION	
1.1 Background of Study	1
1.2 Problem Identification	3
1.3 Aim of Study	3
1.4 Objectives of Study	4
1.5 Hypothesis	4
1.6 Significance of Study	5
1.7 Scope of Study	5
CHAPTER TWO: LITERATURE REVIEW	
2.1 Swiftlet	6
2.2 Aerodramus Fuciphagus	7
2.3 Edible Bird Nest (EBN)	8
2.3.1 Nutrient of Edible Bird Nest	9
2.3.2 Standard Size of Edible Bird Nest (EBN)	10
2.4 Nitrite	11
2.5 Scaffolding Nest	12
2.6 Natural Compatible Scaffolding Nest Materials	14
2.6.1 Clay	14
2.6.2 Stoneware	14
2.6.3 Limestone	15