

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**STAGE-STRUCTURED LEFKOVITCH MATRIX POPULATION
MODELLING Aedes Aegypti**

P12M19

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IN THE NAME OF ALLAH S.W.T, THE MOST GRACIOUS, THE MOST MERCIFUL

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
ABSTRACT.....	vi
1. INTRODUCTION.....	1
1.1 Motivation.....	1
1.2 Problem Statement.....	4
1.3 Research Objectives.....	4
1.4 Scope and Limitation.....	5
1.5 Significance of Study and Research Benefit.....	5
2. BACKGROUND THEORY AND LITERATURE REVIEW.....	6
2.1 Background Theory.....	6
2.2 Literature Review.....	10
3. METHODOLOGY.....	13
3.1 The Collection of Data.....	14
3.2 The Simulation of <i>Aedes aegypti</i> Mosquito.....	14
3.3 The Process of Finding the Result.....	19
4. IMPLIMENTATIONS.....	19
4.1 Process of Imitations.....	25
5. RESULTS AND DISCUSSION.....	27
6. CONCLUSIONS AND RECOMMENDATIONS.....	52
REFERENCES.....	54
APPENDIX A.....	57
APPENDIX B.....	58
APPENDIX C.....	61

LIST OF TABLES

Table 2.2 : Applications for Mosquito Population Model	12
Table 4.1 : Survival Rate at Temperature of 27.2°C	20
Table 4.2 : Duration of Egg Laid Per Day for Each Stage	21
Table 4.3 : Development rates at Temperature 27.2°C	21
Table 5.1 : Result of each stages of <i>Aedes aegypti</i> population in January 2018	27
Table 5.2 : Result of each stages of <i>Aedes aegypti</i> population in February 2018	28
Table 5.3 : Result of each stages of <i>Aedes aegypti</i> population in March 2018	29
Table 5.4 : Result of each stages of <i>Aedes aegypti</i> population in April 2018	30
Table 5.5 : Result of each stages of <i>Aedes aegypti</i> population in May 2018	31
Table 5.6 : Result of each stages of <i>Aedes aegypti</i> population in June 2018	32
Table 5.7 : Result of each stages of <i>Aedes aegypti</i> population in July 2018	33
Table 5.8 : Result of each stages of <i>Aedes aegypti</i> population in August 2018	34
Table 5.9 : Result of each stages of <i>Aedes aegypti</i> population in September 2018.....	35
Table 5.10 : Result of each stages of <i>Aedes aegypti</i> population in October 2018.....	36
Table 5.11 : Result of each stages of <i>Aedes aegypti</i> population in November 2018...	37
Table 5.12 : Result of each stages of <i>Aedes aegypti</i> population in December 2018...	38

ABSTRACT

Aedes aegypti is the prime factor of dengue virus which dynamic of its population can be influenced by the fluctuation of rainfall. The purpose of conducting this project is mainly to simulate the mosquito population growth associated with rainfall distribution. The dynamic of the mosquito population was simulated by using the transition matrix which is Lefkovitch matrix model. The life cycle of *Aedes aegypti* consists of five stages which are eggs, larva, pupae, adult 1 and adult 2. These five stages of the mosquito life cycle were used in constructing the transition matrix for the matrix model. The study of this report was focused in Shah Alam, Selangor since it has the highest number of reported dengue cases in Malaysia. Therefore, the data of daily rainfall distributions in Subang has been used in this study. The findings of this project show that the population of *Aedes aegypti* will be influenced by the rainfall distribution. The growth of *Aedes aegypti* will be affected when there is no rain or heavy rain. This is because this situation could hinder the fertilization of eggs or affect their breeding habitats. Therefore, the researchers need to further studies on survival and hatching rate based on the current environment, so that the prediction will be more accurate and get more knowledge on the population of *Aedes aegypti*.