THE EFFECTS OF ENVIRONMENTAL ENRICHMENT ON *Phodopus sungorus* (SIBERIAN HAMSTER) IN CAPTIVITY

SITI NUR AIN BT ABDUL RAHIM

Final Year Project Report Submitted in Partial Fulfilment of the Requirements for the Degree of Bachelor of Science (Hons.) Biology Faculty of Applied Sciences Universiti Teknologi MARA

JULY 2017
This Final Year Project Report entitled “The Effects of Environmental Enrichment on Phodopus sungorus (Siberian Hamsters) In Captivity” was submitted by Siti Nur Ain bt Abdul Rahim, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

Lili Syahani bt Rusli
Supervisor
B. Sc. (Hons.) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
72000 Kuala Pilah Negeri Sembilan

Date: 18 JULY 2017
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>ACKNOWLEDGEMENTS</th>
<th>iii</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLE</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>viii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ix</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>x</td>
</tr>
</tbody>
</table>

## CHAPTER 1: INTRODUCTION

1.1 Background Study  
1.2 Problem Statements  
1.3 Significance of the Study  
1.4 Objectives of the Study  

## CHAPTER 2: LITERATURE REVIEW

2.1 Effects of Captivity on Small Mammals  
2.1.1 Stressors in Captivity  
2.1.2 Effects of Prolonged Exposure to Stress  
2.2 Cricetinae sp (Hamsters)  
2.3 Types of environmental enrichment  
2.3.1 Social enrichment  
2.3.2 Physical Enrichment  
2.3.3 Nutritional Enrichment  
2.3.4 Sensory Enrichment  
2.3.5 Occupational Enrichment

## CHAPTER 3: METHODOLOGY

3.1 Materials  
3.1.1 Raw Materials  
3.1.2 Apparatus  
3.2 Methods  
3.2.1 Animal procurement  
3.2.2 Housing conditions  
3.3 Enrichment Program Procedure  
3.3.1 Isolated cage  
3.3.2 Enriched cage  
3.4 Assessment  
3.4.1 Weekly weight measurement  
3.4.2 Maze test  
3.4.3 Ethogram table
3.5 Statistical Analysis 22

CHAPTER 4: RESULTS AND DISCUSSIONS
4.1 Weight assessment 23
4.2 Maze test assessment 26
4.3 Ethogram 29

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS 31

CITED REFERENCES 32
APPENDICES 35
CURRICULUM VITAE 41
ABSTRACT

THE EFFECTS OF ENVIRONMENTAL ENRICHMENT ON *Phodopus sungorus* (SIBERIAN HAMSTER) IN CAPTIVITY

Numerous species of wild as well as domesticated animals live in captivity across the globe in zoos, circuses, pet mills, livestock breeding facilities, pet shops and even at homes being kept as pets. Captivity in the context of this study means that the animal is in a state of being confined in a cage that is inhibiting the animal from expressing their natural behaviour as they do in their natural habitat, and the inability to express this behaviour places stress on the animals. Environmental enrichment (EE) however, can be provided to the captive animals to alleviate the stress by giving them the medium to express their natural behaviour. The aim of this study is to observe the effects of EE on the captive animal’s weight and mental health. Two different housing conditions are set for two groups of animals. This study is carried out on *Phodopus sungorus* hamsters (Siberian hamsters) for a period of 8 weeks. The result shows that hamsters in the enriched group positively gains weight over the weeks while the hamsters in the non-enriched group negatively loses weight and is supported by the Levene’s test which yields a p value of 0.46 that indicates that there is no significant difference between the two variables. This supports the theory that the stress in captivity is may negatively effecting the health of the hamsters. The performance of the non-enriched hamsters on the maze test also deteriorates weekly as compared to the enriched group. Therefore, providing EE are essential to the physical and mental health of captive animals.