

DEVELOPMENT OF A CONTROLLED NURSERY SYSTEM  
FOR CULTURED MUSSEL

THESIS

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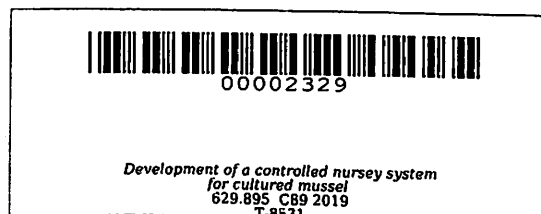
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# **DEVELOPMENT OF A CONTROLLED NURSERY SYSTEM FOR CULTURED MUSSEL**

**Undergraduate Thesis  
Submitted to the Faculty of the  
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of the requirements for the degree  
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## **ABSTRACT**

**CUEVAS, LOURDESS GEM P. and DILIG, MIKO EURO D. Development of a Controlled Nursery System for Cultured Mussel. Undergraduate Design Project. Bachelor of Science in Computer Engineering. Cavite State University, Indang, Cavite. January 2020 Adviser: Prof. Bienvenido C. Sarmiento Jr.**

This study was conducted from December 2018 to October 2019 at Binakayan Shellfish Center, Kawit, Cavite and at Indang, Cavite to develop a nursery system for cultured mussel. Specifically, it aimed to: 1. design and construct the circuit for the control system; 2. design and fabricate the controlled nursery system; 3. develop a software for the system; 4. test and evaluate the system through pilot testing; and 5. conduct a cost computation.

It aimed to help mussel growers, aqua cultural farmers and hobbyist. The automated nursery system was designed and developed to help mussel farmers control mussel spawning and growth. Specific parameters such as pH, salinity and temperature needed to induce a mussel into spawning are automatically set in the machine.

The machine used Arduino Mega as microcontroller which executes the program to control the motors and sensors at the same time. The circuits in the design includes modules such as relay modules, micro SD and sensors such as pH, temperature, and water level.

Results of the evaluation showed that the controlled nursery system was considered desirable and effective for inducing mussel to spawn, monitoring and recording data up until a week of growth. The whole process needed to fully grow a mussel to its juvenile stage was proven effective only through close monitoring and with an effective water management system.

The study was not proven effective on its capability to meet its objectives. Thus, it helps to present the advantages and disadvantages in performance of the controlled nursery system process as a choice for mussel cultivation. The controlled nursery system prototype had a total cost of P 40,000.00.

**TABLE OF CONTENTS**

	<b>Page</b>
<b>BIOGRAPHICAL DATA.....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>v</b>
<b>ABSTRACT.....</b>	<b>vii</b>
<b>LIST OF TABLES.....</b>	<b>x</b>
<b>LIST OF FIGURES.....</b>	<b>xi</b>
<b>LIST OF APPENDIX TABLES.....</b>	<b>xii</b>
<b>LIST OF APPENDIX FIGURES.....</b>	<b>xiii</b>
<b>LIST OF APPENDICES.....</b>	<b>xiv</b>
<b>INTRODUCTION.....</b>	<b>1</b>
Statement of the Problem .....	1
Objectives of the Study.....	2
Significance of the Study.....	3
Time and Place of the Study.....	3
Scope and Limitation of the Study.....	4
Definition of Terms.....	5
<b>REVIEW OF RELATED LITERATURE.....</b>	<b>6</b>
<b>METHODOLOGY.....</b>	<b>38</b>
Materials.....	38
Methods.....	41
Design and construction of microcontroller unit.....	41
Design and fabrication of the controlled nursery system for mussels.....	42
Software development of the controlled nursery system for mussels.....	43

Testing and Evaluation.....	45
Cost Computation.....	45
<b>RESULTS AND DISCUSSION.....</b>	<b>46</b>
Principle of Operation.....	46
Microcontroller Circuit of the Nursery System with Web Application	46
The Controlled Nursery System.....	48
The Software for the Nursery system web application.....	52
Testing and Evaluation.....	53
Evaluation of the Web Application of the System.....	55
Summary of the Evaluation.....	56
Cost Computation.....	59
<b>SUMMARY, CONCLUSION, AND RECOMMENDATION.....</b>	<b>61</b>
Summary.....	61
Conclusion.....	62
Recommendations.....	63
<b>REFERENCES.....</b>	<b>64</b>
<b>APPENDICES.....</b>	<b>67</b>

**LIST OF TABLES**

<b>Table</b>		<b>Page</b>
1	Salinity of different water typers.....	35
2	Variation of dissolved oxygen with temperature.....	35
3	The total mean average comparison of the automated readings versus the manual readings with percent error.....	55
4	Evaluation of the participants .....	56
5	Summary table of trials performed.....	57
6	Cost estimate of the materials for the system.....	59

## LIST OF FIGURES

Figure		Page
1	The metabolic rates of aquatic organisms increase as the water temperature increases.....	33
2	The Microcontroller block diagram .....	42
3	Main dimensions of controlled nursery system for mussels.....	43
4	System flowchart for the control nursery system.....	44
5	Schematic diagram of controlled nursery system for cultured mussels.....	48
6	Photographic front view of the controlled nursery system.....	49
7	Peltier cooler installed in filter box of air pump.....	50
8	Photographic top view of controlled nursery system for cultured mussels.....	50
9	Photographic view of the circuit box of the controlled nursery system.....	51
10	Flow chart for sending data to web application .....	52
11	Screenshot view of the loaded web application .....	53
12	Trochopore stage of green mussel.....	58
13	Pediveliger stage of green mussel.....	58

**LIST OF APPENDIX TABLES**

<b>Appendix Table</b>		<b>Page</b>
1	Average mean readings from initial evaluation.....	69
2	Average mean readings from improve prototype system .....,.....	69
3	Raw readings from improve prototype system .....,,,,.....	70
4	Average mean readings from prototype with inducer.....	78
5	Final evaluation and comparison of average mean of readings from automated system vs manual .....,.....	79



**LIST OF APPENDIX FIGURES**

<b>Appendix Figure</b>		<b>Page</b>
1	Arduino Mega.....	81
2	SD Card Module.....	81
3	Relay Module .....	82
4	GSM Module.....	82
5	Filtration System.....	83
6	Refill System.....	83
7	Automated Feeder.....	84
8	Temperature Sensor.....	84
9	pH Sensor.....	85
10	Water Level Sensor.....,,.....	85
11	Fans.....	86
12	Microcontroller box.....	86
13	Mussel Breeders.....	87
14	Female Mussel Spawning.....	87
15	Male Mussel Spawning.....	88
16	Photographic top view of design project with label.....	101

**LIST OF APPENDICES**

<b>Appendix</b>		<b>Page</b>
1	Tables.....	68
2	Figures.....	80
3	Program Codes.....	89
4	User’s Manual.....	98
5	Forms and Letters.....	102

# DEVELOPMENT OF A CONTROLLED NURSERY SYSTEM FOR CULTURED MUSSEL

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## INTRODUCTION

Mussels are mollusks (phyla Mollusca) with two (2) shells putting them in the class Bivalvia. Mussels can be identified by size, color, and shape of shell. Mediterranean mussels and Blue mussels are two species of commercial aquaculture where the propagation or rearing of aquatic organisms is focused on the production of shellfish for human consumption. Due to the fact that mussels produce sticky, byssal threads they adhere in clumps on pilings or rocks, farming mussels often takes advantage of this trait by seeding line/rope from docks, piers, or long lines. (Britannica, 2009)

There are three (3) species of mussels in the Philippines which are used as food: the green mussel *Perna viridis*, the brown mussel *Modiolus metcalfei* and *M. philippinarum*. The green mussel or “*tahong*” as it is locally known is the only species of mussel farmed commercially in some areas in the Philippines. The brown mussel, although they are harvested from natural grounds, are not suitable for farming because