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CONTAMINATION IN GREEN MUSSEL (*Perna viridis*) COLLECTED FROM SELECTED COASTAL TOWNS OF CAVITE

THESIS

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LEAD CONTAMINATION IN GREEN MUSSEL *(Perna viridis)* COLLECTED FROM SELECTED COASTAL TOWNS OF CAVITE

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ABSTRACT

SHERYL B. BORJA and GENALYN M. ROMEN. Lead Contamination in Green Mussels (*Perna viridis*) Collected from Selected Coastal Towns of Cavite. Undergraduate Thesis- Bachelor of Science in Biology. Cavite State University, April 2007. Adviser: Mrs. Rosemarie R. Calma.

This study was done to detect the presence of lead within the coastal municipalities of Cavite where green mussels were grown. Histopathological examination of the liver and gonads of *Perna viridis* was also done to describe the effects of lead on these tissues. A relationship was drawn between the body parameters and the gonadosomatic index or heptosomatic index, and between physicochemical parameters and lead level to verify the damage brought about by the presence of lead as primary pollutant in the selected sampling sites.

A completely randomized design (CRD) scheme with lead level and frequency of sampling were utilized and green mussels samples were randomly collected from these experimental areas of Cavite namely; Bacoor, Kawit and Cavite City three times at four week interval.

A total of 135 green mussels samples and two liters of water from each experimental site were collected for analyses. The data were statistically analyzed using one way ANOVA while Person correlation was used to determine the relationship between liver weight, body weight, HSI, Gonad weight and GSI.

Results showed that Cavite City had the highest mean for body length and body width while Bacoor had the highest mean for liver and gonad weight. Some physicochemical properties of water quality were measured and analyzed; lead content,

hardness, dissolved oxygen and turbidity. Kawit had the highest mean for dissolved oxygen and lowest mean for lead level, compared with Bacoor having the highest mean for lead level and hardness. Cavite City on the other hand, ranked 2nd among the three sites for mean for lead level and hardness. In general, all the water parameters tested were significantly different between the three sites. The organosomatic indices were analyzed and results showed that the HSI was highly correlated with mean liver weights and was not influenced by a change in its body weight. This would indicate that liver weight was a good bio indicator. GSI was useful in determining the reproductive maturity of the green mussel and not its body weight. Hispathologicalanalyses of the lever and gonads revealed necrotic lobules and degenerated hepatocytes. Irregularity in shapes and distribution of oocytes within the ovary and spermatogonia in the testes of hermaphroditic samples were also observed.

Bacoor and Cavite City coastal areas were highly polluted and contaminated with harmful lead metal. Although Kawit recorded a lower lead level but this should cause an alarm. Overall results confirmed the possibility of lead poisoning due to bioaccumulation on green mussel consumers. Due to paucity of information regarding histopathological signs of lead-contaminated green mussels and unavailability of trace lead examination in the tissues, the histopathological evidences presented led us only to speculate that this might be due to the presence of lead which was ten times that of the Environmental Management Bureau (EMB, 2002) standard for class SA water or other environmental stressors.

TABLE OF CONTENTS

	Page
BIOGRAPHICAL DATA	iii
ACKNOWLEDGEMENT	v
ABSTRACT	vi
LIST OF TABLES	ix
LIST OF FIGURES	ix
LIST OF APPENDIX TABLE	xi
INTRODUCTION	1
Statement of the Problem	2
Objectives of the Study	3
Significance of the Study	3
Scope and Limitations	3
Time and Place of the Study	4
REVIEW OF RELATED LITERATURE	5
Lead Toxicity and Physiological Effects in Human	6
Renal Effects	7
Hematologic Effects	8
Reproductive Effects	8
Developmental Effects	8
Green Mussel as Bioindicator of Water Pollution	9

METHODOLOGY..... 10

Research Design..... 10

Population and Sampling..... 10

Research Setting..... 10

Data Gathered..... 11

Statistical Treatment of Data..... 12

RESULT AND DISCUSSION..... 13

Description of the Experimental Sites..... 13

Description of Collected Specimen..... 16

Correlation of Body Parameters..... 18

SUMMARY, CONCLUSION AND RECOMMENDATION..... 22

Summary..... 22

Conclusion..... 23

Recommendation..... 24

BIBLIOGRAPHY..... 25

APPENDICES..... 27

LIST OF TABLES AND FIGURES

Table **Page**

1 Summary table of measurements for water parameters and description of the experimental sites..... 13

Figure

1 Map of Experimental Site..... 14

2 Panoramic View of the sampling sites in Bacoor, Kawit and Cavite City..... 15

3 Photomicrographs of Liver and Gonads of Green Mussel..... 16

4 Haematoxylin/eosin-stained photomicrographs of the liver and gonads of green mussel collected from the three towns of Cavite..... 17

5 Correlation between hardness and lead level in all three towns of Cavite..... 18

6 Correlation between GSI and HSI of the three towns in Cavite 19

7 Correlation between HSI and Liver weight of the three towns of Cavite..... 19

8 Correlation between GSI and Gonad weight of the three towns of Cavite..... 20

9 Correlation between HSI and Body weight of the three towns of Cavite..... 21

LIST OF APPENDIX TABLES

		Page
1	Physico-chemical Properties of Water Collected from Bacoor, Cavite City and Kawit.....	28
2	Lead Detected from the Three Lowlands Towns of Cavite.....	28
3	Correlation of different Body Parameters during 1st sampling.....	28
4	Correlation of different Body Parameters during 2nd sampling.....	29
5	Correlation of different Body Parameters during 3rd sampling.....	29
6	Correlation Analysis of different Body Parameters on Kawit on first sampling period.....	30
7	Correlation Analysis of Different Body Parameters on Bacoor First Sampling.....	31
8	Correlation Analysis of Different Body Parameters on Cavite City on First Sampling.....	32
9	Correlation Analysis of Different Body Parameters on Kawit on Second Sampling.....	33
10	Correlation Analysis of Different Body Parameters on Bacoor on Second Sampling Period.....	34
11	Correlation Analysis of Different Body Parameters on Cavite City on Second Sampling Period.....	35
12.	Correlation Analysis of Different Body Parameters on Kawit on Third Sampling Period.....	36
13.	Correlation Analysis of Different Body Parameters on Bacoor on Third Sampling Period.....	37

14. Correlation Analysis of Different Body Parameters on Cavite City on the Third Sampling Period..... 38

15. Correlation Analysis between GSI and Gonad weight on Kawit..... 39

16. Correlation Analysis between GSI and Gonad Weight on Bacoor..... 40

17. Correlation Analysis between GSI and Gonad Weight Cavite City..... 41

18. Test Result of physico- chemical Properties of Water Analysis during1st Sampling..... 42

19. Test Result of physico- chemical Properties of Water Analysis during 2nd Sampling..... 44

20. Test Result of physico- chemical Properties of Water Analysis during 3rd sampling..... 45

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INTRODUCTION

Bivalves have been used in numerous environmental assessment studies chiefly because they are sessile and suspension-feeding organism found in or near sites of environmental concern. Monitoring studies utilizing bivalves currently rely on the comparison of growth, survival and contaminant bioaccumulation (Blackmore 2002).

The results of the prospective risk assessment in Manila Bay (2004) indicated a cause for concern regarding the quality of shellfish resources for human consumption due to the presence of fecal coliform, certain heavy metals and pesticides in shellfish tissue. In fact, in 1993 the highest concentrations of copper and lead were found in Cavite which was actually higher than the concentrations inside the bay while a high threshold value was obtained for lead in the shellfish (mussels and oysters) tissues suggesting that consuming shellfish may pose a relatively significant risk to human health. (PEMSEA MBEMP TWG- RRA, 2004).