



**ANURAN DIVERSITY PATTERN ALONG DISTANCE TO WATER  
SOURCE GRADIENT IN MOUNT PALAY-PALAY MATAAS-NA-GULOD  
PROTECTED LANDSCAPE, LUZON ISLAND, PHILIPPINES**

A Research Presented to the  
Biological Sciences Department  
College of Science and Computer Studies  
De La Salle University - Dasmariñas  
City of Dasmariñas, Cavite

In Partial Fulfilment of the Requirements for the Degree  
of Bachelor of Science in Biology Major in Human Biology

**JANEL PAULINE G. CHUA**  
**RICHARD CHRISTIAN E. VASQUEZ**

March 2014



### ABSTRACT

Anuran diversity patterns along distance to water source gradient were studied in the mountain of Palay-Palay. The study was conducted to ascertain anurans species that are reliant on water and that are not as reliant to a water source. Environmental factor comes into account to determine if these variables affect the anurans niche in its habitat. Nine (9) standardized 100 x 10m strip transects were sample from April-July of 2013 utilizing strip transect sampling, visual encounter survey (VES), and acoustic encounter survey (AES). Habitat recordings were also taken into consideration at each strip transect for a wider array of diversifying what species of anurans could be encountered. Out of nine (9) transects, a total number of 168 individuals of anurans was recorded, A total of 7 anuran species was recorded which included the *Platymantis* spp. that is believed to be possible Cavite endemics. The highest number of species was ten (10) meters away which is close to the river bank, among nine (9) transects, transect one (1) had the lowest value of species diversity and transect nine (9) had the highest. Canonical correspondence analysis (CCA) was utilized resulting to determining terrestrial anurans to aquatic anurans by means of aquatic anurans which tend to be in proximity along a water source and the terrestrial anurans can live far from a water source.



## TABLE OF CONTENTS

Title Page	1
Abstract	2
Approval Sheet	3
Acknowledgments	4
Table of Contents	6
List of Tables	8
List of Figures	9
List of Plates	10
CHAPTER 1 INTRODUCTION	
1.1 Background of the Study	11
1.2 Statement of the Problem	13
1.3 Scope and Limitations	14
1.4 Significance of the Study	14
1.5 Definition of Terms	15
CHAPTER 2 LITERATURE REVIEW	
2.1 Conceptual Literature	17
2.2 Related Studies	22
CHAPTER 3 METHODOLOGY	
3.1 Research Setting (or Instrument)	28
3.2 Research Procedure	29



3.3	Data Gathering and Statistical Analysis	32
CHAPTER 4 RESULTS AND DISCUSSION		
4.1	Results	35
4.2	Discussion	51
CHAPTER 5 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS		
5.1	Summary	55
5.2	Conclusions	57
5.3	Recommendations	58
Cited References		59
Appendices		
A.	Map of Study Site	70
B.	Field data sheet for transect sampling	71
C.	Field data sheet for vegetation and environment	72
D.	Estimation of percent canopy cover	73
E.	Curriculum Vitae	74



### LIST OF TABLE

1. Species richness estimates ( $\pm$  SE) and diversity ( $H'$ ) in different study sites based on nonparametric estimators in EstimateS
2. Distribution and counts of anurans along a 100-m transect from a water source.
3. Means and standard deviations of vegetation-related variables at the different habitats of the different study sites.
4. Means and standard deviations of microclimatic and edaphic variables at the different habitats of the different study sites.
5. Spearman's rank correlation matrix between vegetation-related variables.



### LIST OF FIGURES

1. Species Accumulation Curve, Mao Tau	37
2. Ordination of 17 habitat variables on 2 canonical axes from Paleontological Statistics (PAST)	47
3. Ordination of 7 anuran species on 2 canonical axes from PAST	48
4. Ordination of 7 anuran species and their habitat preferences on 2 canonical axes using PAST	49
5. Canonical Correspondence Analysis (CCA) biplot of 7 anuran species and 17 habitat variables on 2 canonical axes using PAST	50



### LIST OF PLATES

1. Members of Family Rhacophoridae.  
*Rhacophorus pardalis* (A) and *Polypedates leucomystax* (B) 35
2. Family Ceratobatrachidae, *Platymantis corrugatus* (A);  
Family Ranidae, *Platymantis dorsalis* (B);  
*Platymantis mimulus* (C); Family Dicroglossidae,  
*Occidozyga laevis* (D) and *Limonectes woodworthi* (E) 36
3. Some microhabitats of anurans identified from the  
different study sites included tree trunks (A), rocks (B),  
and leaves (C) 40
4. Some pairs in amplexus: *R. pardalis* (A); *R. pardalis* and  
*O. laevis* (B and C) 41