



**LAND SNAILS IN MTS. PALAY-PALAY / MATAAS NA GULOD
NATIONAL PARK (MPP/MGNP), LUZON, PHILIPPINES:
SYSTEMATIC OCCURRENCE AND
DISTRIBUTION PATTERNS**

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ABSTRACT

Name of Institution: De La Salle University – Dasmariñas
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Title: Land Snails in Mts. Palay-palay/Mataas na Gulod National Park (MPP/MGNP), Luzon, Philippines: Systematic Occurrence And Distribution Patterns
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STATEMENT OF THE PROBLEM:

This study aimed to determine the systematic occurrence and distribution patterns of land snails in Mts. Palay-palay/Mataas na Gulod National Park, Luzon Island, Philippines.

Specifically, the study answered the following questions:

1. What are the different taxa or species of land snails present in the study area?
2. How do land snails occur in terms of species richness and relative abundance?



3. What distribution patterns do land snails in the study area exhibit?
4. What are the habitat preferences of land snails with respect to altitude?
5. Is there a significant effect of the existing abiotic factors such as temperature and humidity on the diversity and abundance of land snails?

SCOPE AND COVERAGE:

This is a descriptive study which focused on determining the systematic occurrence of land snails, their abundance, their patterns of distribution, and their relationship with the abiotic factors in the forest and non-forest habitats of Mts. Palay-palay/Mataas na Gulod National Park, Luzon Island, Philippines. The actual study covered a period of five months from August to December 2002.

METHODOLOGY:

Land snails were collected by transect sampling along three predetermined transects, each subdivided into four elevation gradients or stations. The chosen transects were the three major trails of the park and the stations were 201-300 (Station 1), 301-400 (Station 2), 401-500 (Station 3), 501-600 masl (Station 4). During collection, ambient



temperature and humidity readings and the microhabitats in which samples were found were recorded.

MAJOR FINDINGS:

1. There were a total of 17 taxa noted to exist in MPP/MGNP. They represented five families: Cyclophoridae (3 *Leptopoma* and 4 *Cyclophorus*), Camaenidae (2 *Obba*), Trochomorphidae (2 *Trochomorpha*), Bradybaenidae (1 *Calocochlia*, 1 *Helicostyla*, and 2 *Bradybaena*), and Helicariionidae (2 *Hemiglypta*). Respective parenthetical accounts were the number of species and the genus represented by the family.

2. Cyclophoridae represented the most abundant family. It accounted for almost two thirds (66.05per cent) of the total number of observed land snails. Second was Bradybaenidae with 14.3per cent relative abundance (RA). The Helicariionidae was the third with 10.7per cent RA. Family Trochomorphidae with 5.8per cent RA and Camaenidae accounted for remaining percentage of 3.04per cent RA.

3. Eleven species were tree foliage dwellers, the majority of which were found at Station 2 with an overall abundance of 77per cent. The rest were distributed to tree bark, logs, rocks, forest litter, soil, road railing and house wall. *Cyclophorus* sp. 5 was the most dominant shrub-dwelling species with 71 observed individuals (21.6per cent RA).



Leptopoma sp. 4 was the predominant species in the tree leaf microhabitat with 45 (13.7 per cent RA) observed individuals. *Cyclophorus* sp. 1, a soil surface dweller, was the most dominant species in the study area with 88 individuals (26.8 per cent RA).

4. The majority of snails (64 per cent) were found at Station 2 followed by Station 1 with 26 per cent land snail abundance. Stations 3 and 4 had abundances of 8.8 and 0.06 per cent respectively. The snails were distributed thickly along the elevational gradient of 301-400 masl. Most of the snails were found to be arboreal-dwelling species (76 per cent) with an overall abundance of (61 per cent). The snail *B. similis* exhibited the widest distribution manifesting its presence in almost all of the identified microhabitats. Their altitudinal distribution, however was limited to the lower elevations of the study area.

5. Plots of temperature and humidity gradients against relative abundance and species diversity revealed reciprocal relationship to the former. Abundance and diversity on the other hand reached their maximum at the middle of the moisture gradient.



CONCLUSIONS:

Based on the results of the research, it was concluded that the snail diversity and abundance are directly correlated to humidity and elevation. Likewise, the patterns of distribution are mainly influenced by elevation and humidity. Distribution is almost restricted to the arboreal stratum. From the results, it is induced that high vegetational diversity plays a crucial role in the way of life of the land snails. To complement the stated problems, the conclusions below are mentioned.

1. The land snail fauna of the study area is diverse with a total of 17 taxa representing five families.
2. *Cyclophorus* sp. 1 is the most abundant land snail in the study area.
3. Most species are tree leaf dwellers and mostly located at the elevation range of 301-400 masl.
4. The land snails exhibited specialized niche occupancy. Most could be found in the arboreal stratum of the forest habitat and they exhibited maximum abundance and diversity at the elevation range of 301-400 masl. The distributional trend followed a skewed profile with respect to abundance. This parameter gradually increased for the first two



elevation gradients station then it abruptly decreased for the next elevation gradients.

5. Humidity and elevation are interrelated with distribution, abundance and species diversity. Temperature is a secondary influencing factor.

RECOMMENDATIONS:

Based on the findings of this research, the following are recommended.

1. A detailed vegetational analysis of the study area must be conducted. This should clear doubts regarding the derived conclusion that high plant diversity is a major player in the ecology of land snails.
2. To supplement the first recommendation, food preferences of land snails should be also determined.
3. Predation must be studied for this undoubtedly affects the abundance of each species of land snails.
4. The environmental factors that the genus *Hemiglypta* are very sensitive to must be determined, for the abundance of its representative species may be used as an indicator for any other factor that the genus is sensitive to.
5. Abiotic factors like soil moisture and depth and distribution of forest litter should be studied so as to make an intelligent assessment



regarding their relationship on the diversity, density, and distribution of species especially the ground stratum occupants.

