International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Spiders Arachnida Araneae of Two Schools in Valencia City - A Preliminary Survey

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Abstract: ***This study was made to differentiate the sizes of spiders in four areas of Central Bukidnon Institute. This study assessed the sizes of spiders in Central Bukidnon Institute, Bagontaas, Valencia City, Bukidnon, and Lilingayon National High School, Lilingayon, Valencia City, Bukidnon Philippines. Specifically, this study aimed to determine the arachnid sizes in the areas of both schools, compare the significant difference of the spider's sizes. Modified search and hand collecting method was used for samplings and measurement. The results of this study show that Central Bukidnon Institute has smaller numbers of spiders seen in the campus, with smaller sizes than Lilingayon National High School. The average of spider in CBI is much lower than the average spiders seen in LNHS based on the average mean of both schools. The results shows that there is a significant difference of spider's sizes measured between groups and within groups, significant difference of sizes in both areas except area 3 (back) due to the low average number of spider's seen in both areas.***

Keywords: Spiders, Arachnida, Biodiversity, Modified Search and Hand Collection, Central Bukidnon Institute, Lilingayon National High School.

1. Introduction

1.1 Background of the study

Worldwide changes, from habitat degradation and distinctive species to anthropogenic climate change, have commenced the sixth tremendous mass extinction event in Earth's. Nowadays, biodiversity faces a disaster, human things to do raise the rate of species extinctions to a thousand or greater instances. The current elevation in human activities puts unparalleled stress on natural processes and if persisted sooner or later destroys the affected ecosystems (Pinto et al., 2008).

This disaster has a number of negative outcomes for humanity, encompassing economies, health, environmental services, and moral and religious prosperity (Wilson, 2002).

As species end up endangered and disappear, the incorporation and maintenance of protected areas have growingly been considered as essential for fending off the habitat loss and conserving the exceptional rates of plant and animal endemism that are standards to hotspot status and to guard web sites of global biodiversity significance (Sodhi et al., 2008).

The wetland locales of Ashtoum El-Gamil (Lake Manzala) are under heightening worry because of the broad advancement of petroleum gas ventures and urbanization. The complexity of environments and their organic networks has authorized preservation scientists to develop elective techniques to screen exchange that would be excessively costly or hard to measure directly (Landres et al., 2005; Meffe and Carroll, 1997).

Researchers subsequently utilize certain taxa that show definable reactions to the ecological changes as markers of the state and nature of this condition. Bio indicators collaborate with information and refined data on natural conditions and, accordingly, bear the cost of a reasonable evaluation of the biological condition of the earth. These bio indicators ought to flawlessly reflect the abiotic or biotic condition of a domain, communicating the impact of natural change on a territory, network, or biological system, or is demonstrative of the assorted variety of a subset of taxa, or of the entire decent variety, inside a region.

Spineless creatures or invertebrates, with their short life-cycles, nearly simple to test, fast reactions to ecological changes, incredible bounties and high assorted variety of species, can be utilized as significant bio indicators which show some proportion of the character of the living space inside which they are found (Buchholz, 2010; Pearce and Venier, 2006).

Arachnids are the best enhanced and bottomless with more than 43600 perceived species invertebrate (Platnick, 2013)

This pervasiveness, assorted variety and the environmental job of spiders make them excellent bio indicators of the biological system the executives rehearses in light of the fact tha0t they can be effectively gathered and distinguished and are differentially touchy to normal and anthropogenic unsettling influences (Pearce and Venier, 2006).

As indicated by Kaltsas et al (2014) spiders have ended up being acceptable bio indicators of anthropogenic unsettling influence.

There are only a few recorded data and studies for Philippine spiders due to limited inventory resources and few local arachnologist. Most of the collections are limited to rice land habitats (Chua et al., 2014). Hence, this study will be conducted.

The main purpose of this study is to collect, compare and identify arachnid sizes in the areas of the two schools in Valencia City. It aims to determine the relationship of spiders as bio indicators to climate change.

This study aims to have sample of spiders or fluid-preserve specimens for future research as basis useful for science experiment in laboratories and support conservation efforts in the locality to preserve the environment's health and biodiversity.

The paper is structured as follows: Chapter 1 includes the research problems, objectives, significance, and the scope and delimitation of the study: Chapter 2 presents the studies which are related to the topic of the study: Chapter 3 shows the research design, location, establishment of sites, research instruments, and collection of specimen.

Conceptual Framework of the Research

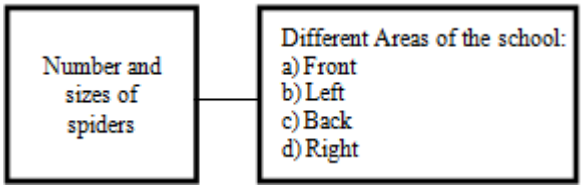

Figure 1: The figure shows the connection between Number and sizes of spiders to the different areas of the school. The different area serves as the catalyst for the number and sizes of spiders making these the independent variable. The number and sizes are dependent on the different areas of both schools: a) Front, b) Left, c) Back and d) Right.

1.2 Research Hypotheses

Null Hypothesis (*Ho)*
There is no significant difference between the sizes of the spiders found in different areas.

Alternative Hypothesis (*Ha)*
There is a significant difference between the sizes of spiders found in different areas of the two schools:
a) Central Bukidnon Institute and Lilingayon National High School
1) Area 1 Front
2) Area 2 Left
3) Area 3 Back
4) Area 4 Right

2. Methodology

This chapter describes the research design that was applied in the study, locale of the study, entry protocol, selection of establishment and sampling site, research instruments that were employed, collection of specimens, Statistics Data Analysis, preservation, and photo documentation that was used and data gathering procedures.

Research Design
Descriptive-comparative design was used in this study to collect, determine the numbers, identifies its sizes and compare in two schools of Valencia City. With the use of vernier caliper, the spider's sizes were measured. It was use a quantitative method to count and determine the numbers of spiders and their sizes in both schools.

Locale of the Study
The study was conducted at Central Bukidnon Institute in Bagontaas, Valencia City, Bukidnon. It is a non-sectarian, Private Christian Secondary School under the Division of Valencia City (DEPED). It was founded in the year of 1968. The school is under the Seventh-day Adventist Church. It offers Secondary Education from Grade 7 to Grade 12. It is composed of different subject teachers, faculty, and staffs. The institution has more than 600 students that offer Junior High School and Senior High School and Lilingayon National High School, formerly known as Lurugan National High School Annex. A DepEd managed Monograde Public Secondary School located in the first district of Bukidnon.

Figure 2: Figure 1 geographic map of the study area, Republic of the Philippines indicating Bukidnon with the red tag, Satellite map of Valencia City indicating land area and Satellite map of Central Bukidnon Instituite and Lilingayon National High School indicating with the red tag

Entry Protocol

A letter was sent to the school director or principal of Central Bukidnon Institute, and Lilingayon National High School, asking a permission to conduct a study of Spiders (Arachnids: Araneae) of two schools in Valencia City Campus and Science Laboratory of Central Bukidnon Institute for preliminary survey.

Selection and Establishment of Sampling Sites

Central Bukidnon Institute and Lilingayon National High School campus was the sampling area. The sites were established into four zones: front area, right side, left side, and back portion of the campus.

Figure 3: Sampling sites. Picture a) Central Bukidnon Institute. b) Lilingayon National High School

Collection of Specimens

Inspection of areas was made by carefully searching for spiders and spider webs hanging from plants or small corner. The thermometer was suspended in the air for one minute and reading was made. Three readings were averaged to get the mean temperature in degree Celsius.

Per sampling area, 5-8 sampling hours were allotted to modified hand collection (Azevedo et al., 2014). Counting will be done within the 20-meter line transect. The fresh samples will be photograph for documentation and initially measured.

Figure 4: Researcher getting the specimens and measured, researcher reading the temperature in every area

Preservation of Specimens

The collected samples were preserved using 70% ethyl alcohol (Saini, Chauhan, Mathur, & Singh, 2012). Labels will be placed on each container with the following information: date of collection, place of collection, collector, scientific name, family name, and common name of the species. Samples were displayed at Science Laboratory of Central Bukidnon Institute.

Species Richness and Diversity

Results of the actual counting were tabulated. Simpson's diversity measure was used to analyze the diversity of the spiders. The Biodiversity Professional Software version 2 (BioPro ver.2) was utilized to generate diversity graphs.

Statistics Data Analysis

Results of the actual counting were tabulated. Descriptive, ANOVA, Post Hoc Test Multiple comparison, Group statistics and Independents sample test measure will be used to analyze the statistics and significant difference of the spiders in sizes and numbers. The XBM SPSS Statistics Data editor was utilized to generate statistics results.

Photo Documentation

Photographs of the step by step process were taken. A Canon DSLR camera will be used for documentations.

Statistical Treatment

The study used descriptive–comparative designs. To answer question No 1 the mean, standard deviation were computed. To answer research question No.2 the significant difference was computed, To answer research questions No. 3, 4, 5, and 6, independent sample t–test was used to find the difference of spiders sizes in each areas of both school.

3. Summary, Conclusion and Recommendation

3.1 Summary

This study investigated the Spiders Arachnida Araneae of the two schools of Valencia City. This study aims to collect and compare the arachnid sizes in two schools in Valencia City and discover if there is a significant difference of sizes. This study was conducted at Central Bukidnon Institute, Bagontaas, Valencia City and Lilingayon National High School, Lilingayon Valencia City. The study used descriptive–comparative. The primary source of data was the results of Sympsons Biodiversity, SPSS statistics results from ANOVA, Descriptive, Post Hoc Test Multiple comparison, Group statistics and Independents sample test.

The analyses show that:

1) The spiders in four areas of Central Bukidnon Institute are low in diversity (0.1-1.6) and richness of local abundance. This may be due to certain forms of anthropogenic disturbances in the areas.
2) The average mean and the standard deviation of spiders sizes in Lilingayon National High School compared to Central Bukidnon Institute,
3) There a significant difference of spider sizes between the two schools between groups and within groups,
4) The two schools were computed based on the sizes of the spiders and identified that Central Bukidnon Institute has more significant difference in terms of spiders sizes than Lilingayon National High School,
5) There is a significant difference of spider sizes between the front area of CBI and LNHS as the significant (2-tailed) results 0.042 and 0.020 which is lesser than 0.05,
6) The sizes of spiders in both left areas have the very high significant difference. The significant (2-tailed) results of both are 0.000 which is characterized as high significant difference,
7) There is no significant difference of spider's sizes of both area back due to the small number of spiders in both schools, and
8) There is a significant difference of spider's sizes in area right. Significance (2-tailed) results as 0.000 in both schools that represents a high significant difference of both areas of two different locations.

3.2 Conclusion

The abundance and number of spider species is negatively affected by the impact of many human land uses, such as habitat fragmentation, fire and pesticides said Benítez and Méndez (2011).

The results of this study show that Central Bukidnon Institute has smaller numbers of spiders seen in the campus, with smaller sizes than Lilingayon National High School. The average of spider in CBI is much lower than the average spiders seen in LNHS based on the average mean of both schools. The results shows that there is a significant difference of spider's sizes measured between groups and within groups, significant difference of sizes in both areas except area 3 (back) due to the low average number of spider's seen in both areas.

The results also show that the reason of low diversity and local abundance of spiders are in areas that are disturbed by anthropogenic activities. Therefore, the spiders played an important part of our ecosystem. The diversity of spiders in the ecosystem is influenced by several factors (Larrivee and Buddle, 2010). According to Kostanjšek et al (2015), there are some environment disturbances that negatively affect the abundance and the diversity of spiders, including: the cultivation of the soil, the plan pruning and the use of synthetic pesticides.

As indicated by Kaltsas et al (2014) spiders have ended up being acceptable bio indicators of anthropogenic unsettling influence. The comparison of the two schools ended up CBI has low local abundance of spiders than LNHS as well the sizes of the spiders. The altitude and the areas as urban and rural also play an important role to differentiate the local abundance whether the area is disturbed or not.

Therefore, the null hypothesis which states that there is no significant difference between the sizes of the spiders found in different areas, must be rejected while the alternative hypothesis which states that there is a significant difference between the sizes of spiders found in different areas of the two schools must not be rejected.

3.3 Recommendations

The researchers may suggest the following:

1) Follow up research that takes a longer sampling period and used other sampling sites that includes mountains, forests and caves of Bukidnon for a comparative local biodiversity assessment,
2) Includes the assessment of conservation status and basic ecological data like relative humidity and microhabitat of spiders, and
3) Further, the results of this study may support data gatherings and procedures to future research.

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