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SOME SYSTEMATIC DATA FOR STINK BUGS (PENTATOMIDAE) IN KRUJA REGION

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Abstract – This study present a systematic and ecological analysis to the family *Pentatomidae*, Stink Bugs (Hemiptera), in the different ecosystems of Kruja region (Albania). The collection of biological material is performed during the period 2019- 2021. The study represents 14 genus and 19 species.
By analyzing the collected material, genus *Carpocoris* is represented with more species, 3 specie respectively and frequency 15.79%.
Habitats of Droja station are represented by more species than the other stations, with 14 species and a frequency of 73.68%, with less species Boje station with 8 species and a frequency of 42.11%.
Based on the "*Jaccard index of similarity coefficient*", Droja and Bret have a higher similarity coefficient than the other stations, of 47.05%, with the lowest coefficient are Boje with Mali Kruje stations with 5.26%, showing a similarity of the ecological factors between these stations, which means a similarity between these habitats.

Keywords – Stink Bugs, Hemiptera, Eosystem, Kruja

I. INTRODUCTION

Stink Bugs (*Pentatomidae* Family Leach, 1815) are insects with antennas that are constituted by 5 segments. This family includes individuals of middle to big dimensions and are predominantly small. Their body is of oval shape and covered by a solid mantel. Their scutellum is big and of triangle shape as 'mantel' [1]. They present green, yellow and metallic bright colors [2]. They are classified as phytophagy species. Their negative impact in agriculture is mainly encountered in crops, rice, fruit trees, etc. They stand grouped and sack the liquid of the hosted tree and present considerable resistance toward pesticides ([3], [4], [5]). Also, in this group exist predators that are feed with other insects [6].
Our study considers species of this family in the ecosystems of Kruja , attempting to present a general panorama of this family in this habitat.

II. MATERIALS AND METHOD

Collection of the biological samples was conducted for the period 2019-2021, in different habitats near Droja, Brret, Mali Kruje and Boje stations. The collection of individuals was achieved through random procedures during the warm part of year May-September, for each station, during the day time 09^{00}-15^{00}.
In the present investigation, entomological mowing nets of diameter 80cm, aspirators and Pitt's traps were employed. Mowing with entomological nets was undertaken using diagonals across surfaces of $100m^2$ (10m x 10m), passing five times across each square's diagonal [7]. In our field expedites were used also air nets.
Once collected, the individuals were placed in plastic bottles and labelled with the date and name of station. The fine biological materials are placed in plastic flacons 150-200 cc. they were sent to the scientific laboratory and preserved in bottles of ethanol solution 95%, acetic acid, distilled water in v:v:v (80:5:20 ml) and some ether drops ([7], [8]). Taxonomic determination is done with stereomicroscope Trinocular Stero Microscope (*with still camera model 50240003 n/s C88794*) in

the MSN lab employing standard classification keys for this family ([9], [10] - [15]).

Jaccard similarity coefficient [16] was used to assess the species similarity at the different stations. In the present investigation, efforts were made to record the characteristics of the different sites and thus to assess any impact the different habitats have on the distribution of the species.

III. Results and Discussion

Results should be clear and concise. The most important features and trends in the results should be described but should not interpreted in detail.

Determination of species that belong to the *Pentatomidae* family is presented in the Anex according to the encountered species in the ecosystem in Kruja region, accompanied by sites for every station where they encountered Droja, Brret, Mali Kruje, Boje.

The scientific determination of the collected materials in this study (Table 1) presents species of the *Miridae* family to the ecosystem in Kruja region, represented by 14 genera and 19 species. In that aspect was determined also the frequency per every species according to equation:

$$F = \frac{n}{N} \times 100$$

Where: n- number of species for each family; N- number of species in total encountered

Table 1: Number of species according to genera

Nr	Scientific name	Species number	Species frequency (%)
1	Aelia	2	10.53%
2	Carpocoris	3	15.79%
3	Dolycoris	1	5.26%
4	Euryderma	1	5.26%
5	Graphosoma	2	10.53%
6	Mustha	1	5.26%
7	Neottiglossa	1	5.26%
8	Nezara	1	5.26%
9	Picromerus	1	5.26%
10	Piezodorus	1	5.26%
11	Stagonomus	2	10.53%
12	Staria	1	5.26%
13	Thalagmus	1	5.26%
14	Zicrona	1	5.26%
	Total	**19**	**100%**

Analysis and interpretation of the data results in our study, indicates that according to species' diversity, genus *Carpocoris* is represented with more species, 3 specie respectively and frequency 15.79%, *Aelia*, *Graphosoma* and genera Stagonomus are represented by 2 species and frequency 10.53%, while other genera were represented by only 1 species and frequency 5.26%.

According to the species variety, more represented resulted Droja station, respectively with 14 species, or frequency 73.68%, followed by Bret station with 11 species or frequency 57.89%, Mali Kruje station with 9 species and frequency 47.37%, and last resulted Boje station with 8 species or 42.11% frequency (Table 2, Figure 1).

Table 2: Number of species according to station

Station	Number of species	Species frequency
Droja	14	73.68%
Boje	8	42.11%
Mali Kruje	9	47.37%
Bret	11	57.89%

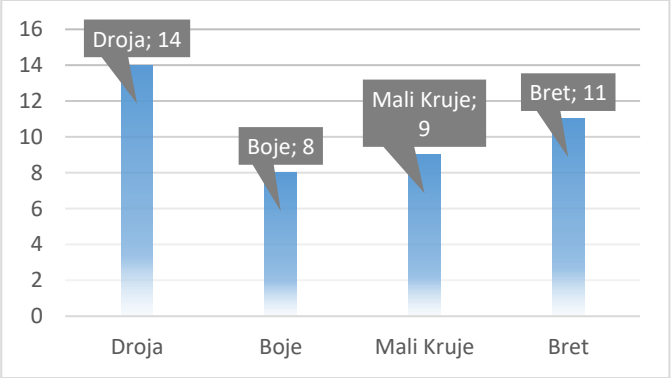

Figure 1: Distribution of species according to the station in study (number of species)

Calculation of the coefficient of similarity Jaccard gave an indication on the species similarity among the stations (Jaccard, 1901). In the table are presented the numbers of common species (C), according to the stations, and the coefficient of similarity (C_J) for each station (Table 4).

Is studied the correlation between the species to highlight the influence of the conditions in the species distribution, by taking in consideration the species itself, own their ecological valence.

Table 3: Number of common species and similarity coefficient according to each station

	Droja	**Boje**	**Mali Kruje**	**Bret**
Droja		C = 7 C_J =46.66%	C = 6 C_J = 35.29%	C = 8 C_J = 47.05%
Boje			C = 1 C_J = 6.25 %	C = 4 C_J = 26.66%
Mali Kruje				C = 4 C_J =25%

From analysis, we concluded that the higher values of the coefficient of species' similarity stands among Droja and Bret stations by 47.05% with 8 common species, followed from similarity among stations Droja and Boje by 46.66% with 7 species, Droja and Mali Kruje by 32.29% with 6 common species. The lowest value stands among Boje and Bret, and Bret and Mali Kruje by 26.66% and 25% with 4 species, as well as Boje and Mali Kruje station by 5.26% and 1 common species.

Analysis of similarity of species structure , give indication on the affinity regarding to species structure for these stations, as well as impact of ecological factors in general, and particularly the anthropogenic factor impact.

IV. CONCLUSION

This study presents a systematic and ecological analysis of *Pentatomidae* family, in ecosystems of Kruja region.

These exemplars represented by 14 genera and 19 species. Results give indication genus *Carpocoris* is presented with the maximum values of diversity, by 3 species and frequency 15.79%.

Droja station dominates regarding to the species diversity, by 14 species or 73.68%, followed by Bret station with 11 species or by 57.89%.

Maximum value of coefficient of species' similarity stands between Droja and Bret stations by 47.05%, the minimum value of coefficient stands among Boje and Mali Kruje stations by 6.25%.

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