Global Advanced Research Journal of Agricultural Science (ISSN: 2315-5094) Vol. 3(2) pp. 077-084, February, 2014.
Available online http://garj.org/garjas/index.htm

Full Length Research Paper

A contribution to the knowledge of the stink bugs (pentatomidae, hemiptera) in the ecosystems in tirana region (Albania)

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Accepted 03 February, 2014

This study aims to present a systematic and ecological analysis to the family *Pentatomidae*, Stink Bugs (Hemiptera) the true bugs, in the different ecosystems of Tirana region (Albania). The collection of biological material is performed during the period 2008- 2010. The study analyzed 102 individuals, which are represented by 19 genus and 27 species. By analyzing the collected material, the genres *Carpocoris*, *Holcostethus* and *Stagonomus* are more representative with 3 species and a frequency of 11.11%. Habitats of Iba station are represented by more species than the other stations, with 14 species and a frequency of 51.85%, with less species Ndroqi station with 9 species and a frequency of 33.33%. Based on the "*Jaccard index of similarity coefficient*", Dajtit with Farka and Iba with Ndroq stations, have a higher similarity coefficient than the other stations, of 27.77%, with the lowest coefficient are Vora with Ndroq and Farka with Ndroq stations with 5%, showing a similarity of the ecological factors between these stations, which means a similarity between these habitats. Zoogeographic regions_Mediterranean, representing most of the species, with 9 species and frequency 33.33%.

Keywords: Stink Bugs, *Pentatomidae,* ecosystem

INTRODUCTION

Strink bugs (family Pentatomidae Leach , 1815) are insects with antennae with 5 segments . This family includes individuals with medium - large size , and are generally small . Their body is oval with a hard envelope . Skutelumi is large , triangular-shaped shaped " shield " (SERVADEI , 1967) . Have color green , yellow , and metallic or brightly . Their tars are 2 or 3 segments (Tremblay , 1981) . Are fitofagë types . Cause agricultural damage in cereals , rice , fruits, etc. . Stay grouped plants absorb fluid and exhibit resistance fore agricultural pesticides (GENNARO , 1977 , MILLER , 1971 , POLLINI , 2002) . There are several species of prey that feed on other insects (all SERVADEI al , 1972 , SILVESTRI , 1939) .

Our paper takes the study of this family types in lowland ecosystems and hilly mountainous area of Tirana , trying to provide an analytical overview of the species of this family , for this area .

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Table 1. Lista e llojeve Familja *Pentatomidae*

No.	Scientific name	No.exempl	Dajt	Ibë	Vorë	Farkë	Ndroq
1	Genus Aelia						
1	*Aelia acuminata* Linnaeus, 1758	6	+				+
2	*Aelia rostrata* Boheman, 1852	1		+		+	
2	Genus Bagrada						
3	*Bagrada abeillei Puton, 1881-*	2	+		+		
3	Genus Carpocoris						
4	*Carpocoris fuscispinus Boheman, 1853*	4		+	+		
5	*Carpocoris purpureipennis* De Geer, 1773	14		+	+		
6	*Carpocoris melanocerus Mulsant & Rey, 1852*	6		+			+
4	Genus Codophila						
7	*Codophila varia* Fabricius, 1787	4	+			+	
5	Genus Dolycoris						
8	*Dolycoris baccarum* Linnaeus, 1758	16	+	+		+	
6	Genus Euryderma						
9	*Eurydema ornate* Linnaeus, 1758	1		+			+
7	Genus Graphosoma						
10	*Graphosoma lineatum* Linnaeus, 1758	10	+				+
11	*Graphosoma semipunctatum* Fabricius, 1775	3		+		+	
8	Genus Holcostethus						
12	*Holcostethus fissiceps Horvàth, 1906*	1			+	+	
13	*Holcostethus sphacelatus* Fabricius, 1794	1	+				+
14	*Holcostethus vernalis Wolff, 1804*	1			+		
9	Genus Mustha						
15	*Mustha spinosula* Lefebvre, 1831	3	+	+			
10	Genus Neottiglossa						
16	*Neottiglossa bifida Costa A, 1847*	1			+	+	
11	Genus Nezara						
17	*Nezara viridula Linnaeus, 1758*	2		+		+	+
12	Genus Palomena						
18	*Palomena prasina* Linnaeus, 1761	2			+		
13	Genus Picromerus						
19	*Picromerus conformis Herrich – Schâffer, 1894*	2	+		+	+	
14	Genus Piezodorus						
20	*Piezodorus lituratus* Fabricius, 1794	2		+	+		
15	Genus Stagonomus						
21	*Stagonomus amoenus* Brullé, 1832	2	+			+	
22	*Stagonomus bipunctatus Linnaeus, 1758*	1	+		+		+
23	*Stagonomus pusillus* Herrich – Schâffer, 1830	4		+			+

Table 1. Continue

16	Genus Staria						
24	*Staria lunata* Hahnn, 1835	5	+	+		+	
17	Genus Thalagmus						
25	*Thalagmus flavolineatus* Fabricius, 1798	3		+			+
18	Genus Ventocoris						
26	*Ventocoris trigonus Krynicki, 1871*	2	+	+			
19	Genus Zicrona						
27	*Zicrona caerulea* Linnaeus, 1758	3				+	

MATERIAL AND METHODS

Gathering material was conducted in the period 2008-2010 in different habitats in the area of Tirana , Dajt stations , Ibe , Vora , Fark , Ndroq . The collection of individuals became so rastëstësore during the months from May to September , for each area , during 0900-1500 the morning hours .

Collection is mainly used entomological nets 80cm diameter mowing , mowing is carried along the diagonals of equal surface of 100m2 (10m x 10m) , passing five times along each diagonal of the square (COLAS , 1969) . It is also used aerial nets .

After grumbulllimit in the field , individuals are inserted in plastic bottles , which are labeled with the date and place of collection . Fine material is inserted in plastic bottles 150 - 200cc . In laboratory bottles were kept in 95% ethyl alcohol solution , acetic acid , distilled water in the ratio 80:5:20 (ml) and a few drops of ether (COLAS , 1969; CHAPMAN , 1985) .

Determination of material is collected via survey conducted by Stereomicroscopes ZEISS (Carl Zeiss STEMI 2000 - C , 455044-9901 Series , Optical : W - Pi 10x/23) , and individuals are determined using the keys to the family setting , collections and previous publications (AUKEMA et al , 1999; DOLLING , 1991; HALIMI et al , 2010; SCHUH , 1995 ; Ribes , 2008; Tremblay , 1990).

RESULTS AND DISCUSSION

During this study we systematically determine the types of family Pentatomidae , we have provided a list of the types referred by us to lowland ecosystems and hilly country of Tirana . For each type we give the number of individuals for each venue station Dajt , Ibe , Vora , Fark , Ndroq also given for each type zoogjografik the respective region (Table 1) .

From the definition of material collected in our study of 102 individuals met the family of Tirana Pentatomida ecosystems , represented by 19 genus and 27 species (Table 2 Figure 1) . We have defined and frequency for each type , according to the formula :

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

n : nr. each family types , N : no. Total species that we met (27 species)

From analysis of these data , we show that on the basis of diversity , gender Carpocoris , Holcostethus and Stagonomus represented by more species , with 3 types and frequency 11.11 % , Aelia and Graphosoma genders are represented by two types or frequency 7:41 % , other genres are represented only by one type and frequency 3.70 %

According diversity on species is represented by Ibest station 14 types or frequency 51.85 % , followed by Dajtit station 12 types or frequency 44.44 % Farkës station 11 types and frequency 40.74 % and less Ndroqi station types with 9 species or 33.33 % (Table 3 , Figure 2-3) .

We analyzed the similarity between stations llojore , calculating llojore Jaccard similarity coefficient (Jaccard , 1901) . We denote the number of common types of stations = C , and CJ = similarity coefficient for each station (Table 4) .

Stations present to the extent of their geographical and ecological conditions, a variety of ecosystems , for this reason we have made this species koleracion to point out the influence of these conditions in their distribution , given that the very types have their ecological valencën .

From the analysis , the highest coefficient of similarity between stations llojore is to forge and IBES Dajtit with Ndroqi , with 27.77 % and the 5 common types , the similarity between rich IBES station to forge with 25 % and 5 types; Dajtit and Ndroqi with 23:52 % and 4 common types , the lowest among Dajtit and IBES with 18:18 % and 4 types , and Vora Dajtit with 15.78 % and 3 common types , IBES and Vora with 14:28 % coefficient 3 common types , Vora and Farka with 10:52 % and 2 types , between Vora

Table 2. Numri i llojeve sipas gjinive

Nr	Stientific name	Nr. Llojeve	Frekuenca Llojore %
1	*Aelia*	2	7,41
2	*Bagrada*	1	3,70
3	*Carpocoris*	3	11,11
4	*Codophila*	1	3,70
5	*Dolycoris*	1	3,70
6	*Eurydema*	1	3,70
7	*Graphosoma*	2	7,41
8	*Holcostethus*	3	11,11
9	*Mustha*	1	3,70
10	*Neottiglossa*	1	3,70
11	*Nezara*	1	3,70
12	*Palomena*	1	3,70
13	*Picromerus*	1	3,70
14	*Piezodorus*	1	3,70
15	*Stagonomus*	3	11,11
16	*Staria*	1	3,70
17	*Thalagmus*	1	3,70
18	*Ventocoris*	1	3,70
19	*Zicrona*	1	3,70
	Total	27	100

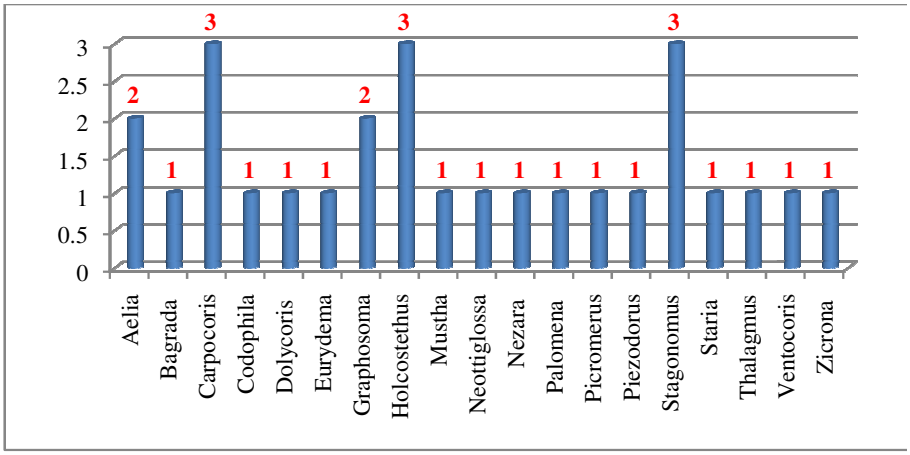

Figure 1. Distribution of the number of species classified by gender

Table 3. Numri i lojeve sipas stacioneve

Stacioni	Nr. Llojeve	Frekuenca Llojore
Dajt	12	44.44
Ibë	14	51.85
Vorë	10	37.04
Farkë	11	40.74
Ndroq	9	33.33

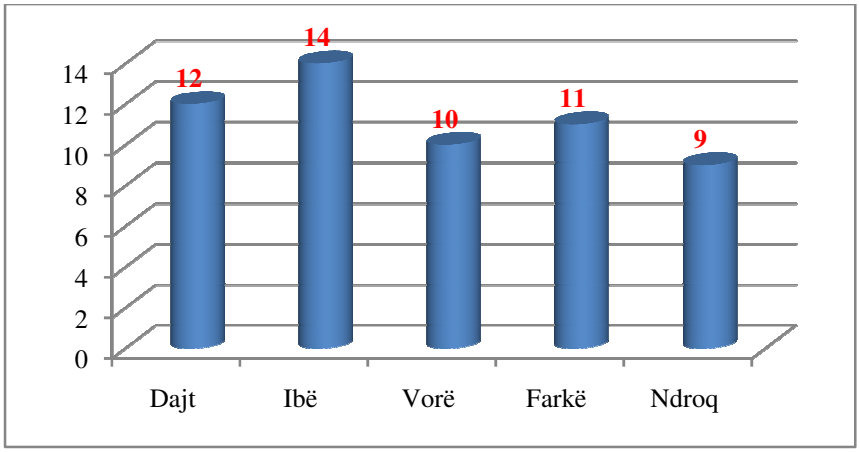

Figure 2. Distribution of the number and types of stations

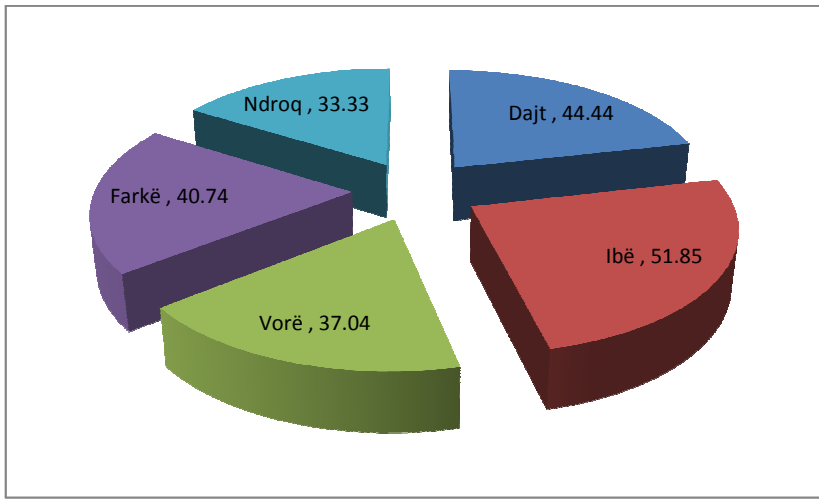

Figure 3. % Distribution of the number of types of stations

Table 4. Number of species common and similarity coefficient of stations

	Ibë	Vorë	Farkë	Ndroq
Dajt	C = 4 C_J = 18.18%	C = 3 C_J =15.78%	C = 5 C_J = 27.77%	C = 4 C_J =23.52 %
Ibë		C = 3 C_J =14.28%	C = 5 C_J = 25%	C = 5 C_J =27.77 %
Vorë			C = 2 C_J =10.52 %	C = 1 C_J =5.55 %
Farkë				C = 1 C_J = 5.26%

Table 5. The number of species by region zoogjeografike

Rajoni Zoogjografik	Nr. Llojeve	Frekuenca llojore
Holartik	3	11.11
Paleartik	7	25.93
Euro – Siberik	2	7.41
Euro- Afrikan	1	3.70
Euro – Mesdhetar	2	7.41
Mesdhetar	9	33.33
Euroqëndro-Aziatik	1	3.70
Kozmopolitan	1	3.70
Ballkanik	1	3.70
TOTAL	**27**	100,00

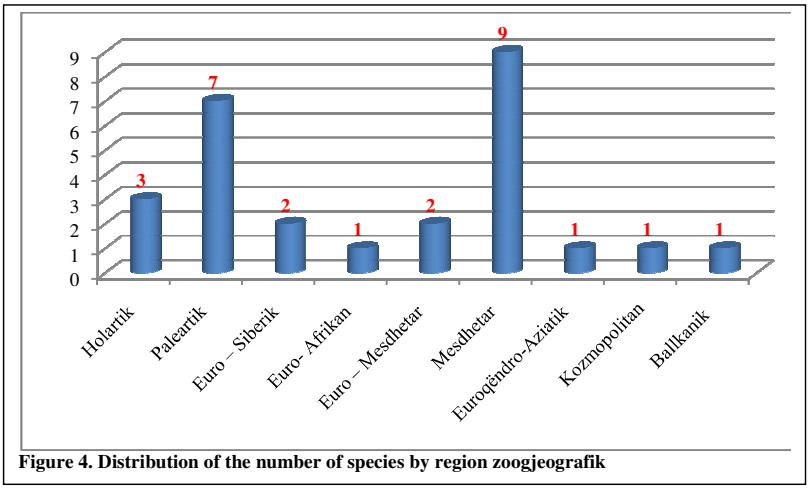

Figure 4. Distribution of the number of species by region zoogjeografik

and Ndroqi stations and Fark and Ndroqi with 26.5 % and with only one common type .

Analysis of similarity of species composition , shows affinity species composition of these stations , shows the influence of ecological factors on the whole , but at the same time and the influence of anthropogenic factors in particular.

The analysis by gupimeve zoogjeografike types (Table 5 Figure 4-5) , the nucleus of the family Pentatomidae is

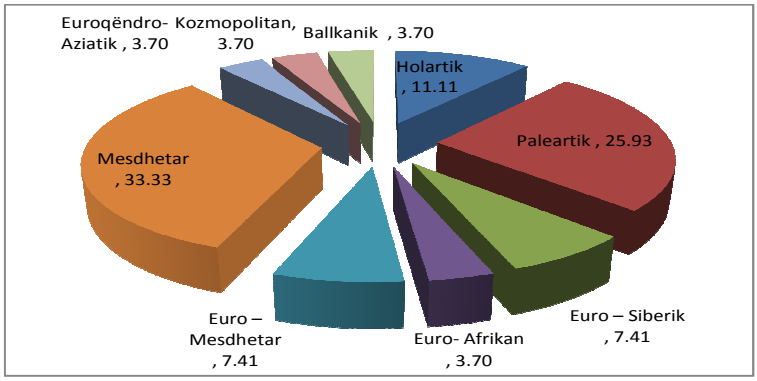

Figure 5. Llojore frequency distribution by region zoogjeografik

zoogjeografik Mediterranean grouping with 9 types and frequency 33.33 % , less types Paleartik region with 7 species or 25.93 % , Holartik 3 species or 11.11 % , with very few types Siberik Euro - Mediterranean and Euro - 2 types or 7:41 % , and the Euro - African -Asian Euroqëndro cosmopolitan and Balkan with type 1 or 3.70 % .

RESULTS

The study presents a systematic analysis of 102 specimens and ecological family Pentatomidae, the ecosystems of the area of Tirana, represented in 19 genus and 27 species.

With the large variety of genres janw Carpocoris, Stagonomus Holcostethus and 3 types and frequency 11.11%.

Iba dominates llojore terms of diversity, with 14 species or 51.85%, with fewer types Ndroqi with 9 species or 33.33%.

Higher coefficient of similarity between stations llojore is to forge and IBES Dajtit with Ndroqi, with 27.77%, lower coefficient is between Vore and Ndroqi and Farka and Ndroqi with 26.5%.

Most species is represented by zoogjeografik Mediterranean region with 9 types or 33.33%, the Euro-African-Asian Euroqëndro, cosmopolitan and Balkan with only 1 kind or 3.70%.

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