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Data from the Study of Aquatic Coleopters and Heteropters of the Shpat Area in the Elbasan Region[#]

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Abstract: In this article are presented the results of the study of the coleopteran and heteropteran of the area Shushice-Gjinar-Zavaline of the province of Shpat, Elbasan. In this study systematic, bio-ecological and zoogeographic data are provided.

Keywords*: Coleoptera, Heteroptera, fresh water, macroinvertebrates, microhabitat, limnic, lentic, lotic, areal, ecological niche.*

Introduction

Inland water insects are of great importance for food chains in these environments. For this purpose, in the framework of the continuation of earlier studies in this field, several expedition days were organized for the identification and collection of materials in the area of Shushica (mainly at source of Bysheku), Gjinar (springs and reservoirs) of Zavalina (sources and artificial reservoir of Nezhan village). After that, during the work in the laboratory were examined the types of Coleoptera and Hemiptera found describing also bioecological data (temperature, pH and elevation above sea level) as well as biocenosis indicators at some of the stations. The premises where the material was assembled include streams, reservoirs, ponds and springs of this area.

Given the impact of aquatic insects on food chains, especially in the transformation of organic matter into the decomposition of alive matter which forms the basis of fish food, it is worthwhile to continue the studies in this field in the future including students of scientific master, but also specialists in other areas related to biodiversity and the environment.

Shushica (Bysheku) is located to the south of the city of Elbasan (about 9 km from the city) in the valley of Shkumbin River, in the left of its flow. It is sprinkled with water springs where a karst spring, with a flow of 70 liters per second that comes near a giant rock, where there is a tourist spot of the same name.

The genus is a largely mountainous area. The climate is wet in winter and dry in summer. There are many fresh springs. The highest point is Bukaniku, 1800 m above sea level. The village of Gjinar is located at 920-1000 m above sea level. There are about 2 ha of black pine forests, with old and young trees of 18-20m height, with age of 150-158 years.

Zavalina is located in the village of Gjinar, roughly the same geographical position as it is. The vegetation in this region is dominated by Mediterranean forests and gourds especially in Byshek: *Populus, Salix, Ulmus, Rubus ulmifolius, Spartium junceum, Paliurus aculeatus, Crataegus monogina, Rosa canina*.

While Gjinar-Zavalina is dominated by the area of oak and beech with vegetation mainly represented by wood species*: Quercus robur, Q.cerris, Fagus sylvatica, Castanea sativa, Pinus nigra, Carpinus orientalis, Juniperus oxycedrus, Buxus sempervirens, Fraxinus ornis etc. so are hydro and hygrophilous plants such as Rumex alpines, Ranunculus aquatilis, Tussilago farfara, Salix gender etc*.

Results and Discussions

From the expeditions conducted in the studied area were found: 19 species of Coleopteres belonging to 5 families and 14 genders. Of these 14 species met in the area of Bysheck (Shushice), 8 species in the Gjinar area and only 3 species were found in the Zavaline area. Some species are common as seen in the following tables.

Regarding Hemiptera are found: 15 species belonging to 8 families and 9 sexes. Of these 9 species were found in Byshek, 6 species in Gjinar and 3 genders in Zavaline. As we said some are common types.

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[#]*This paper has been presented at Alblakes-17, Elbasan-Albania*

Order Coleoptera

1.Gyrinus marinus Gyllenhall, 1808
Dimensions: 6.7-7.3mm.
Found: 2 specimens in Byshek 10.4.2016 (Temp. = 11 °C,pH = 6.5)
Provided by: Paparisto 2001.
Holoarktik

2. Gyrinus dejeani Brylle, 1832
Dimensions: 6-6.3 mm.
Found: 2 specimens in Byshek 20.7.2016 (Temp = 32 °C,pH = 6.5),
Gjinar: 2 specimens (Temp. = 17 °C, pH = 6.5).
Provided by: Apfelbeck 1904
Mediterranean-makaronezik

3. *Noterus clavicornis* De Geer, 1774
Dimensions: 4.4 mm.
Found: 3 specimens in the reservoir of Nezhan, (Zavaline) 30.07.16 (Temp 22oC, pH = 6.5).
Euro Asian center.
Provided by: Apfelbeck 1904

4. Hydroglyphus pusillus Fabricius 1777
Dimensions: 2.1-2.3 mm
Found: 15 specimens in Byshek 19.10.16 (Temp. = 12 °C, pH = 7)
A new find for Albania
Euro Asian center

5. Hydroporus pubescens Gyllenhall, 1808
Dimensions: 4 mm
Found: 2 specimens in Byshek 28.3.2016 (Temp.=15 ºC, pH=6.5)
A new find for Albania
Euro-Mediterranean

6. Hydroporus planus Fabricius, 1781
Dimensions: 4.1-4.3 mm
Found: 2 specimens in Gjinar: 10.5.2016 (Temp.=17 ºC, pH=6.8)
Provided by: Csiki 1940
Euro-Asian center- Mediterranean-makaronesik

7. *Scarodytes halensis* Fabricius, 1787
Dimensions: 4.3 – 4.8 mm.
Found: 10 specimens in Byshek 25.9.2016 (Temp.=18 ºC, pH=6.8).
Provided by: Apfelbeck 1904
Euro-Asian center- Mediterranean

8.Nebrioporus suavis Sharp,1882.
Dimensions: 4.8-5 mm.
Found: 2 specimens in Gjinar 31.7.2016 (Temp.=17 ºC, pH=6.5).
A new find for Albania
Ilirico-pontic

9. *Laccophilus hyalinus* De Geer, 1774
Dimensions: 4.5 – 5 mm.
Found: 2 specimens in Byshek 10.4.2016(Temp.=12 ºC, pH=6.5) and 20 specimens in the reservoir of Nezhan, (Zavaline) 15.7 2016 (Temp.=22 ºC, ph=6.8).
A new find for Albania
Euro-Mediterranean

10.Copelatus haemorroidalis Fabricius, 1787
Dimensions: 4.5-5 mm
Found: 2 specimens in Byshek 10.4.2016(Temp.=12 ºC, pH=6.5)
A new find for Albania
Euro Siberian

11. *Agabus didymus* Olivier, 1795
Dimensions: 7.8 – 8.1mm.
Found: 3 specimens in Byshek 28.3.2016 (T. = 12ºC, pH = 6).
A new find for Albania
Mediterranean atlantic

12. *Agabus bipustulatus* Linnaeus, 1767
Dimensions: 9.8 – 11.5 mm
Found: 50 specimens in Gjinar 31.7.2016 (T. = 17ºC, pH = 6.5) dhe 10 specimens in the reservoir of Nezhan, (Zavaline) 15.7.2016 (Temp.=22ºC, pH=6.8).
Provided by: Apfelbeck 1904
Euro Siberian

13.Agabus conspersus Marsham,1802
Dimensions: 8 mm
Found: 2 specimens in Gjinar 10.5.2016 (Temp.=17ºC, pH=6.5)
Provided by: Apfelbeck
Palearctic

14.Hydaticus leander Rossi, 1790

Dimensions: 11 mm
Found: 2 specimens in Byshek 28.3.2016 (Temp.=12ºC, ph=6)
A new find for Albania
Etiopico-Mediterranean

15. *Hydrochara caraboides*, Linnaeus, 1758
Dimensions: 18-18.2 mm
Found: 2 specimens in Gjinar 10.05.2016 (T. = 17ºC, pH = 6.8)
A new find for Albania
Euro-Asian

16. *Helochares obscurus* Muller, 1776
Dimensions: 4.6 – 5.9 mm.
Found: 2 specimens in Byshek 25.09.16(Temp.=18ºC, pH=6.8)
A new find for Albania
Holarctic

17. *Laccobius bipunctatus* Fabricius,1775

Dimensions: 3 mm
Found: 2 specimens in Gjinar 31.07.16(Temp=17 ºC, pH=6.5)
A new find for Albania
Euro-anatolic

18. *Helophorus liguricus* Angus, 1970
Dimensions: 6.5 – 7.3 mm.
Found: 2 specimens in Byshek 19.10.16(Temp.=12 ºC,pH=6.7)
A new find for Albania
Euro-Mediterranean

19. Helophorus nubilis Fabricius 1776
Dimensions: 2.8-3.1 mm
Found: 1 specimen in Gjinar 15.05.16 (Temp=20 ºC, pH=6.8) dhe 2 specimens in Byshek 25.09.16 (Temp.=17 ºC C, pH=6.5)
Provided by: Csiki per malin Shkelzen.
Euro-Asian centre

Order Hemiptera
1.Notonecta glauca L. 1758
Dimensions: 15.8 mm
Found: 1 specimen in Gjinar 26.06.2016 (Temp.=21 ºC, pH= 6.8), 2 specimens in Nezhan 15.7.2016(Temp.=22 ºC, pH=6.8).
Provided by: Schumacher 1914, Horvath 1916, Royer 1924, Mançini 1953, Josifov 1970(DEI), Misja 1973, Dhora 2005.
Palearctic

2. Notonecta maculata Fabricius, 1794
Dimensions: 13.2 mm
Found: 2 specimens in Gjinar,26.06.2016 (Temp.=20 ºC, pH= 6.7)
Provided by: Schumacher 1914, Horvath 1916, Mançini 1953
Euro-Mediterranean

3. Notonecta obliqua Gallen, 1787
Dimensions: 15 mm
Found: 1 specimen in Byshek 25.09.2016 (Temp.=17 ºC, pH=6.5) dhe 4 specimens in Gjinar 26.06.2016 (Temp.=21 ºC, pH=6.8)
Provided by: Prof. Misja 1973
Euro-Mediterranean

4. Plea atomaria Pallas, 1771
Dimensions: 2.8 mmm
Found: 4 specimens in reservoir of Nezhanit, (Zavaline) 15.07.2016 (Temp.=22 ºC, pH=6.8)
Provided by: Royer 1924, gathering in Starove
Euro-Mediterranean

5. Nepa cinerea Linnaeus, 1758
Dimensions: 15 – 21 mm.
Found: 2 specimens in Byshek 28.03.2016. (T. = 17oC,pH = 6.5) and 6 specimens in Gjinar 26.06.2016 (Temp.=21oC, pH= 6.8)
Provided by: Schumacher 1914, Horvath 1916, Mancini 1953, Misja 1973, Dhora 2005.
Euro Siberian

6. Paracorixa concinna Fieber, 1848
Dimensions: 7mm - 7.2 mm.
Found: 4 specimens in Byshek 25.09.2006 (T. of water 13.7 oC, pH =6- 6.5)
European.
A new find for Albania

7. Sigara nigrolineata Fieber, 1848
Dimensions: 4.8 – 5.5 mm.
Found: 5 specimens in Byshek 19.10.2016 (T. = 20 oC, pH = 6.5).
Provided by: Schumacher 1914, Horvath 1916, Mancini 1953, Josifov 1970, Prof. Misja 1973.
Euro-Mediterranean

8. *Mesovelia furcata* Mulsant & Rey, 1852
Dimensions: 4-4.5mm.
Found: 2 specimens in Nezhan(Zavaline) 15.07.2016 (T.= 22ºC, pH = 6.8).
Euro Siberian Mediterranean.
A new find for Albania

9. Microvelia pygmaea Dufour, 1833
Dimensions: 2.4 mm
Found: 1 specimen in Byshek 25.09.2016 (Temp.=17 ºC, pH=6.5)
Provided by: Mançini 1953
Palearctic

10. Velia affinis Klt. 1856
Dimensions: 6.2-7mm
Found: 6 specimens in Byshek 25.09.2016(Temp.=16 ºC,pH=6-6.5)
Provided by: Prof. Misja 1973
Mediterranean

11. Gerris argentatus Schummel, 1832
Dimensions: 8.6mm
Found: 2 specimens in Byshek 10.04.2016 (Temp.=17 ºC, pH=7)
Provided by: Horvath,1916(Vlore), Prof. Misja 1973
Euro-Mediterranean

12. Gerris thoracicus Schumm, 1832
Dimensions: 11-11.6mm
Found: 2 specimens in Gjinar 10.05.2016 (Temp.=20 ºC, pH=6.8)
Provided by: Prof. Misja
Palearctic

13. *Gerris (Aquarius) paludum* Fabricius, 1794
Dimensions: 12.5 mm.
Found: 3 specimens in Byshek 25.09.2016 (T. =17ºC, pH =6- 6.5).
Provided by: Schumacher 1914, Horvath 1916, Misja 1973, Dhora 2005.

Euro Siberian

14.Gerris (Aquarius) najas De geer, 1773
Dimensions: 13-16mm
Found: 2 specimens in Gjinar26.06.2016 (Temp.=23 ºC, Ph=6.3)
Provided by: Schummacher 1914, Horvath 1916, Mançini 1953(Elbasan)

Euromagrebin

15. Hebrus pusillus Fallen, 1807
Dimensions: 2.1-2.3mm
Found: 2 specimens in Byshek 25.09.2016 (Temp.=17 ºC, pH=6-6.5)
Provided by: Horvath 1916, Josifov 1970(DEI).
Euro-Mediterranean

Table 1. List of species found in the Shushice-Gjinar-Zavaline area

Nruber	Type	Found in Shushice (Byshek) I	Found in Gjinar II	Found in Zavaline III
	Order Coleoptera			
13	*Gyrinus marinus*	+		
13	*Gyrinus dejeani*	+	+	
13	*Noterus clavicornis*	+		+
13	*Hydroglyphus pusillus*	+		
13	*Hydropous pubescens*	+		
13	*Hydroporus planus*		+	
13	*Scarodytes halensis*	+		
13	*Nebrioporus suavis*		+	
13	*Laccophilus hyalinus*	+		+
13	*Copelatus haemorroidalis*	+		
13	*Agabus didymus*	+		
13	*Agabus bipustulatus*	+	+	+
13	*Agabus conspersus*		+	
13	*Hydaticus leander*	+		
13	*Hydrochara caraboides*		+	
13	*Helochares obscurus*	+		
13	*Laccobius bipunctatus*		+	
13	*Helophorus liguricus*	+		
13	*Helophorus nubilis*	+	+	
	TOTAL Coleoptere	14	8	3
	Order Hemiptera			
1	*Notonecta glauca*		+	+
2	*Notonecta maculata*		+	
3	*Notonecta obliqua*	+	+	
4	*Plea atomaria*			+
5	*Nepa cinerea*	+	+	
6	*Paracorixa concinna*	+		
7	*Sigara nigrolineata*	+		
8	*Mesovelia furcata*			+
9	*Microvelia pygmaea*	+		
10	*Velia affinis*	+		
11	*Gerris argentatus*	+		
12	*Gerris thoracicus*		+	
13	*Gerris(Aquarius) paludum*	+		
14	*Gerris(Aquarius) najas*		+	
15	*Hebrus pusillus*	+		
	TOTAL Hemiptere	9	6	3
	TOTAL Coleoptere -Hemiptere	***23***	***14***	***6***

Some indicators of the biocenosis of Shushica (Bysheku), Gjinar and Zavalines, Elbasan

Byshek: The source water was clean, fluent and in quiet pools. Water in the basin had a depth of 10 cm to 50 cm. There are streams that form water-sloping basins that move slower. Byshek trees are Platanus orientalis, Salix sp., Populus sp., Phragmites, Typha, and other plants such as Equisetum palustre, Tussilago farfara and so on. Its fauna consisted of living beings such as Rana, Natrix, crustaceans such as Gammarus pulex, gastropods such as Radix auricularia, Theodoxus sp. (2 exemplars), Hirudo medicinalis, tricycles of 3 species (9 ex.) among which we can mention a very interesting species Limnephilus rhombicus (3 ex.) dressed in gastropod shells of 1 - 2 mm. In addition, the larvae of R. Odonata of Lestes, Libellula, etc., and larvae of other species were also found.

Gjinar: The altitude is 800 m above sea level. The artificial reservoir is supplied with water from the sources that flow from the Bukanik mountain. The streams and small ponds formed during the springs flow between pine forests are rich in freshwater insects and in the environment around the

reservoir meet scorpions, spiders, genera Litobius, Iulus, lepidoptera, lizards, frogs, turtles, salamanders. In the water rises and triton, characteristic for the lakes of high areas.

While the vegetation is mainly composed of black pine (Pinus nigra), beech (Fagus sylvatica), apricot (Crataegus monogyna), rosa canina, thorax (Rubus ulmifolius) and plenty of fruit trees such as cherries, plums etc.

Stream of Rramani - Nezhan Reservoir: Rramani stream has an altitude of about 700 m. It is a floodlit mountain stream of running and transparent water. The vegetation consists mainly of hazelnut (Corylus avellana), deer (Ostrea carpinifolia), bark, wild pears, wild rose, apricot. In the vicinity of this stream, about 100-150 m (Buxus bacatus) grows. The vegetation of the rock (source) is dominated by Pinguicula hirtiflora, Sedum acre, Hypericum sp., Brachypodium sp. *etc*.

Meet animals such as triton (Triturus sp.), perlids larvae of the Plecoptera order, etc.

The Nezhan reservoir is located about 600 m above sea level, is an artificial water catchment with calm water, sober in general, but in the northern part it is contaminated with organic matter like decomposed leaves and straw. Woody and shrubby vegetation around the lake is represented by species of Quercus, Fagus, Carpinus, Salix etc. Herbaceous vegetation is dominated by Equisetum, Potentilla *etc*.

There are also animals such as the water snake (Natrix sp.), The frog (Rana sp), the Galba truncatula snail, the tipulid larvae and the Sympetrum and Calopteryx strain larvae.

Coleopters found in the study area belong to the origin of these regions and sub-regions

Table 2 shows that in our study area predominate species forming the center of the Eurasian with 4 types, with three Euro-Mediterranean species, Holarctic with two types, Euro Siberian with two types and other centers of one type.

Table 2. Number and % of zoogeographic affinity of the studied area.

Affiliation to zoogeographic origin	Nr. of species	%
Euro-Mediterranean	3	15.8
Holarctic	2	10.5
Euro Anatolian	1	5.2
Euro Central Asian-Mediterranean	1	5.2
Euro Siberian	2	10.5
Euro-centre Asian-Mediterranean-Macaronese	1	5.2
Mediterranean-Macaronesia	1	5.2
Eurasian and Euro-Central Europe	4	21
Palearctic	1	5.2
Mediterranean Atlantic	1	5.2
Mediterranean Ethiopian	1	5.2
Ilirikopontik	1	5.2

Hemiptera submerged waters of the studied area belong to the origin of these regions and sub-regions

From Table 3 show that in our study area predominate with formation types Euro-Mediterranean center with 6 types, Paleoarktik 3 types and Eurosiberik with two types. Other training centers have one type.

Table 3. Affiliation to zoogeographic origin.

Affiliation to zoogeographic origin	Nr. of species	%
Euro-Mediterranean	6	40
Palearctic	3	20
Euro Siberian	2	13.3
Euro Siberian - Mediterranean	1	6.6
European	1	6.6
Mediterranean	1	6.6
Euromagrebin	1	6.6

Conclusions

- The embryos of the studied area are rich in coleopteras and hemipteres.
- Of the 19 types of coleopteras and 15 hemipteres species for the first time are described respectively 11 and 2 types.
- In the chilled water of the Gjinar in the height of 900 m some of the species prefer neutral pH.
- Predominate species of Euro Mediterranean, Eurasian and Euro Asian, Paleoarktic, Holoarchical.
- We think that this area has varied environments where other types can be found.

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