

The zoogeographical character of Balkan Heteroptera

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1381 Heteroptera are known to date from the territory of the Balkan Peninsula namely: 300 species from Dobrudzha, 1000 from Bulgaria, 226 from the european part of Turkey, 282 from the small italian territory belonging to the Balkan Peninsula, 1026 from Yugoslavia, 497 from Albania, 740 from Greece (without the island of Crete and the Dodekanesian islands which geographically are part of Asia minor) and 321 species from Crete.

From a zoogeographical point of view the species belong to two principal faunistic complexes – the Eurosiberian and Mediterranean. 532 or 48.5% of all species belong to the first, 849 species or 61.5% to the latter. The original mediterranean fauna is comparatively ancient. Its formation began towards the middle of the Tertiary period and continued throughout the entire Neogene and Pleistocene when the ancient mediterranean fauna replaced a tropical fauna which had spread on the peninsula during the first half of the Tertiary. This was caused mainly by the cooling of the climate towards the mid-Tertiary.

Today, species with holo-mediterranean, atlanto-mediterranean, north-mediterranean, and ponto-mediterranean distribution, as well as montane-mediterranean species constitute the main part of the Mediterranean faunistic complex. It is characteristic of these species that their number decrease from the plains towards the higher mountains, and increase from north to south, as well as from east to west, which is related to climatic peculiarities in different parts of the peninsula. Thus in Dobrudzha the species of the mediterranean complex constitute 44.6% of all species, and those on Crete 77.9%.

The considerable number of ponto-mediterranean genera and species of Heteroptera in the fauna of the peninsula points to its continuous isolation from the ancient west-mediterranean land mass and its closer faunistic contact with Asia Minor. The isolation between the Tyrrhenian (western) and Aegeaean (eastern) landmass, separated by the Tethys-sea continued throughout the entire Neogene. After the restoration of a land bridge link between the two land masses only 12 west-mediterranean species, such as *Platycranus erberi* Fb., *Orthotylus parvulus* Reut., *Oxycarenus lavatae* (F.), *Holcostethus albipes* (F.) etc. succeeded in reaching the Balkan peninsula and spreading along its Adriatic coastline, some even penetrating into Macedonia.

Montane-mediterranean species, such as *Dichrooscytus valesianus* Fb. and *Dimorphocoris fuscus* Joak. (relicts of an ancient pre-glacial montane fauna of the peninsula) are few.

Only three eremyan species have been found on the Balkan peninsula so far, two on Crete (*Stenopthalmicus fejoumensis* C. and *Ischnopeza pallipes* Put.) and one, probably introduced, in Dalmatia (*Cosmopleurus fulvipes* Dall.). The three, together with the so-called cosmopolitan species of warm zones (comprising such species as *Ochterus marginatus* Latr., *Nabis capsiformis* (Germ.), *Liorhyssus hyalinus* (F.) etc.) can only provisionally be included in the mediterranean faunistic complex, as within the mediterranean area they behave as mediterranean species. Some of them (*Ochterus marginatus*) are probably relicts of the ancient tropical tertiary fauna of the peninsula, while others have penetrated the mediterranean subregion of the Palaearctic realm from the tropical areas of the old world.

The Eurosiberian faunistic complex is historically younger. Its species have penetrated the peninsula from the north driven by the cooling of the climate during the second half of the Pleistocene. These are species with holarctic, holopalaeartic, west palaeartic, eurosiberian, boreomontane and arctoalpine distribution. They are characterized by a decrease in number from north to south and an increase from the plains towards the higher parts of the mountains. Boreomontane and arctoalpine species exist only in montane regions of the peninsula above a certain sea level. In its northern part most of them are found only in the coniferous forest belt of the mountains, consisting mainly of *Picea excelsa*. *Salda litoralis* (L.) and *Aradus pallescens frigidus* Kir. are found only in the sub-alpine belt, i.e. above the timber line.

Balkan endemics are a special case as far as zoogeographical categories are concerned. From a zoogeographical point of view they belong to a heterogenous group, consisting on one hand of ancient mediterranean relicts (paleoendemics) and on the other of phylogenetically younger forms (neoendemics), in most cases appearing at the expense of isolated populations of eurosiberian species resulting from the disjunction of their ranges during the Holocene. *Mecomma ambulans montanus* Jos., *Psallus betuleti montanus* Jos., *Placochilus seladonicus mediterraneus* Jos. etc. are such representatives.

Generally the distribution of endemics on the territory of the Balkan peninsula shows the same specific features as that of the mediterranean complex – their number increases from north to south, and from east to west, and decreases from the plains toward the high parts of the

mountains. Balkan endemics are absent in Dobrudzha while two endemic species (*Halticus henschi* Reut. and *Gardena insignis* Horv.) occur in the northwest corner of the peninsula, in the vicinity of Trieste. Along the Black Sea coast, south of the Balkan Range, the number of endemic species is 6, that in Dalmatia 10. In Southwest Bulgaria there are 23 endemic species, while in Greece there are 31. However, a number of endemics such as *Heterocordylus cytisi* Jos., *Paredrocoris seidenstückeri* Jos., *Orthotylus bureschi* Jos., *Dichrooscytus algericus bureschi* Jos., *Gampsocoris lilianae* Jos., etc. which occur in Southwest Bulgaria will probably be found in Greece. The number of endemic species and subspecies in Crete is 25, or approximately 8% of the total of species, but not one endemic genus has been found so far. Hence this is a case of typical island endemics on a territory which has separated from that of the Balkan peninsula, comparatively recently.

Only five endemic genera (*Adelphophylus*, *Paravoruchia*, *Cremonorrhinus*, *Metastenothorax* and *Singeria*) are known from the territory of the peninsula. This allows the conclusion that endemism of the Heteroptera-fauna on Balkan peninsula is not high. It is greater than that of the Apenine peninsula, but much lower than that of Asia Minor. A full picture for endemism of the Heteroptera-fauna can be developed only after more detailed studies of mainland-Greece, and in particular of its islands, where many more endemics can be expected.

Bibliography

- Josifov, M., 1986. Verzeichnis der von der Balkanhalbinsel bekannten Heteropterenarten (Insecta, Heteroptera). – Faun. Abh. Mus. Tierk. Dresden, 14 (6): 61-93.

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Contributions

The zoogeographical character of Balkan Heteroptera.	M. JOSIFOV	6
A preliminary list and some notes on the Cicadomorpha (Homoptera-Auchenorrhyncha) collected in Greece.	S. DROSOPOULOS, M. ASCHE and H. HOCH	8
Heteropteran fauna of Slovenia: present state and characteristics.	A. GOGALA	14
Cicadellidae of Lebanon: new facts and ideas. (Homoptera - Auchenorrhyncha).	H. ABDUL-NOUR	15
The Psylloidea of Lebanon: preliminary records and prospects.	N. ZEIDAN-GEZE	17
Cixiidae and Delphacidae (Homoptera-Fulgoroidea) from Lebanon – a preliminary synopsis.	M. ASCHE and H. HOCH	18
Heteroptera of the island of Salina (Sicily, Italy).	S. IPPOLITO	20
On the Auchenorrhyncha (Homoptera) from Aeolian island (Sicily, Italy).	V. D'URSO	23
On endemic and little known Heteroptera from Crete.	E. HEISS	28
<i>The Arocephalus longiceps</i> (Kbm.) – (Homoptera Cicadelloidea Paralimni): problems in intraspecific variability, geographical distribution and speciation.	M. ASCHE	30
<i>Patterns</i> of geographic distribution in the planthopper genus <i>Hyalesthes</i> Sign. (Homoptera Fulgoroidea Cixiidae): a phylogenetic approach.	H. HOCH	31
Species-discrimination and geographic distribution in the cydnid genus <i>Tritomegas</i> (Heteroptera, Cydnidae).	D. KAMMERSCHEN	33
Some remarks on the phylogeny of the Lygaeidae based on the male genital system.	I. HOPP	35
Electrophoretic studies on <i>Alebra albostriella</i> complex (Homoptera, Cicadellidae, Typhlocybinae).	M. LOUKAS and S. DROSOPOULOS	42
Biosystematic studies on the genus <i>Alebra</i> Fieber.	M. GILLHAM	44
A parthenogenetic planthopper found in Greece.	P.W.F. de VRIJER	46
Structures producing vibrational signals in Heteroptera.	M. GOGALA	47
The vibratory membranes in the genus <i>Euscelis</i> .	H. STRUBING and G. SCHWARZ-MITTELSTAEDT	49
Anti-predatory defence of some Rhynchota especially as it applies to avian insectivores.	D.L. EVANS	53
Structure organization and dynamics of Hemiptera-Plant communities of a mediterranean area: preliminaries and methodology.	P. PETRAKIS, V. TSELEPATIOTI-PETRAKI and S. DROSOPOULOS	54
DAPROPHECO: A specialized database system for integrated studies in Plant-Hemiptera communities.	P. PETRAKIS	62
Seasonal aspects and most important biotopes of Greece with reference to Hemiptera (Auchenorrhyncha-Homoptera and Heteroptera).	S. DROSOPOULOS	64
Round table on management of nature reserves in Prespa.		69