

Contribution to the knowledge of the zoogeographical investigation of Heteroptera communities of North-Hungarian Medium High Mountain Ranges

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ABSTRACT: *Heteroptera* communities of localities with different bedrock, but same exposition and microclimate is compared by the authors. The aim of their investigation is ranking the collected Heteroptera species according to zoogeographical faunal centurms.

Introduction

Permanent *Heteropterological* collecting in the North-Hungarian Medium High Mountain Ranges have been carried out since 1987. This study contains the analyses of collectings completed at two localities of the above mentioned territory: 1, Sár-hegy (Sár-hill), Mátra Mountains and 2, Nagy-Eged (Nagy-Eged-hill), Bükk Mountains. These two collecting sites are similar in their exposition, but different in structure and bedrock.

Sár-hill (500 m) is situated on the southern part of the Mátra Mountains and it has been a protected area since 1975. The chosen collecting sites are plant communities appearing on andesite bedrock (*Cynodonti-Festucetum psendovinae*, *Diplachno-Festucetum sulcate*, *Stipa stenophilles* facies and left grapeyards associations)

Nagy-Eged-hill (530 m) is situated at the southern part of the Bükk-Mountains, north-east from Eger, and it has been a protected area since 1975. The main body of the hill is built up from grey coloured *Triassic* limestone, but on the southern slopes of it you can find Eocene nummulitic-limestone, too. The plant associations of the examined territory are as follows: *Cleistogemi-Festucetum rupicolae*, *Campanulo divergentiformi-Festucetum pallentis* and associations of abandoned grapeyards.

These two collecting sites can be characterized by southern exposure and approximately the same annual mean temperature (9-10 C°) and annual mean precipitation (530-550 mm). Due to the different bedrocks there are differences in their plant communities.

During the collectings the following methods have been applied: hand picking, sweeping with a net, soil trapping. Collectings were carried out in May, July, August and September of 1994.

In the case of Sár-hill 644 specimens of 88 species have been found. While these numbers are 277 and 70 in the case of Nagy-Eged-hill.

There are 118 *Heteroptera* species have been found at the sampling localities. The number of the same species is 36 [Table I., II.]

Table 1.

Species on the sampling territories

| Species | | Sampling territories | |
|--|------|----------------------|------|
| | | S-h | NE-h |
| Prostemma guttula (FABR., 1758) | EU | 1 | - |
| Prostemma aeneicolle STEIN, 1857 | M | 1 | 2 |
| Aptus mirmicoides (COSTA, 1834) | EU | - | 1 |
| Nabis rugosus (L., 1758) | EU | 2 | 7 |
| Nabis brevis SCHOLTZ., 1846 | EU | - | 1 |
| Nabis ferus (L., 1758) | EU | 6 | 1 |
| Nabis pseudoferus REMANE, 1949 | P-E | 2 | - |
| Nabis punctatus COSTA, 1843 | EU | 1 | - |
| Deraecoris ruber (L., 1758) | H | 1 | - |
| Deraecoris punctulatus (FALL., 1807) | EU | - | 1 |
| Adelphocoris lineolatus (GZ., 1778) | P | - | 4 |
| Adelphocoris vandalicus (ROSSI, 1790) | M | - | 3 |
| Capsodes gothicus (L., 1758) | P | 11 | 2 |
| Capsus ater (L., 1758) | P | - | 6 |
| Liocoris tripustulatus (FABR., 1781) | EU | - | 8 |
| Halticus luteiocollis (PANZER, 1805) | M | - | 3 |
| Lygus pratensis (L., 1758) | P | - | 5 |
| Orthops kalmi (L., 1758) | P | - | 1 |
| Brachycoleus sriptus (FABR., 1803) | EU | 7 | 1 |
| Calocoris ochromelas (GMEL., 1788) | E | - | 3 |
| Calocoris biclavatus (HERR.-SCHAFF., 1835) | E | - | 2 |
| Strongylocoris leucocephalus (L., 1758) | P | - | 3 |
| Haplomachus thunbergi (FALL., 1807) | P(M) | - | 1 |
| Acalypta gracilis FIEB., 1844 | E | - | 3 |
| Acalypta parvula (FALL., 1807) | E | - | 2 |
| Acalypta musci (SCHRK., 1781) | E | - | 1 |
| Lasiacantha capucina (GERM., 1836) | M | 12 | 5 |
| Dictyonota strichnocera FIEB., 1844 | P | 1 | - |
| Catoplatus nigriceps HORV., 1905 | P | 6 | - |
| Catoplatus carthusianus (GUESE, 1778) | E | 15 | - |
| Dictyla rotunda (HERR.-SCHAFF., 1835) | M | 19 | - |
| Dictyla echii (SCHRK., 1781) | Eu | 47 | - |
| Copium clavicorne (L., 1758) | M | 3 | 2 |
| Stephanitis pyri (FABR., 1822) | P | 2 | - |

Sampling territories

| Species | | S-h | NE-h |
|---|------|-----|------|
| <i>Pyrates hybridus</i> (SCOP., 1763) | P | 1 | - |
| <i>Rhinocoris iracundus</i> (PODA, 1761) | P | 1 | 1 |
| <i>Reduvius personatus</i> (L., 1758) | Kp | - | 3 |
| <i>Phymata crassipes</i> (FABR., 1775) | M | 1 | 4 |
| <i>Aradus cinnamomeus</i> (PANZER, 1794) | P | 1 | - |
| <i>Neides tipularius</i> (L., 1758) | E | 6 | - |
| <i>Berytinus clavipes</i> (FABR., 1775) | EU | 10 | - |
| <i>Berytinus montivagus</i> (MEYER-DÜR, 1841) | M | 8 | - |
| <i>Spilostethus equestris</i> (L., 1758) | P | - | 4 |
| <i>Melanocoryphus albomaculatus</i> (GZ., 1778) | P(M) | 2 | - |
| <i>Horvathiolus superbus</i> (POLL., 1779) | M | - | 7 |
| <i>Nysius helveticus</i> (HERR.-SCHAFF.) | P(M) | 1 | - |
| <i>Ortholomus punctipennis</i> (HERR.-SCHAFF.) | P | 7 | - |
| <i>Ischnodemus sabuleti</i> (FALL., 1829) | P | 9 | 5 |
| <i>Platyplax salviae</i> (SCHILL., 1829) | Eu-N | - | 2 |
| <i>Metopoplax origani</i> (KOLENATI., 1845) | P(M) | 7 | - |
| <i>Rhyparocromus (Raglius) vulgaris</i> (SCHILL.,) | P | 7 | - |
| <i>Emblethis verbasci</i> (FABR., 1803) | P(M) | 3 | - |
| <i>Trapezonotus quadratus</i> (FABR., 1798) | M | 2 | - |
| <i>Pyrrhocoris apterus</i> (L., 1758) | H | 3 | - |
| <i>Dicranocephalus agilis</i> (SCOP., 1763) | EU | 3 | - |
| <i>Dicranocephalus albipes</i> (FABR., 1781) | M | 3 | - |
| <i>Dicranocephalus medius</i> (MULSANT & REY, 1870) | E | 2 | - |
| <i>Gonocerus acuteangulatus</i> (GZ., 1778) | EU | 4 | 5 |
| <i>Syromastes rhombeus</i> (L., 1767) | P | 8 | 2 |
| <i>Coreus marginatus</i> (L., 1758) | P | 8 | 6 |
| <i>Spathocera lobata</i> (HERR.-SCHAFF., 1840) | M | 9 | 5 |
| <i>Bathysolen nubilus</i> (FALL., 1807) | E | 4 | - |
| <i>Phyllomorpha laciniata</i> (VILLERS, 1789) | M | 31 | - |
| <i>Coriomeris denticulatus</i> (SCOP., 1763) | E | 10 | - |
| <i>Ceraleptus gracilicornis</i> (HERR.-SCHAFF., 1835) | M | 1 | - |
| <i>Alydus calcaratus</i> (L., 1758) | EU | 3 | 2 |
| <i>Camptopus lateralis</i> (GERM., 1817) | M | 1 | 5 |
| <i>Corizus hyoscyami</i> (L., 1758) | P | 2 | 3 |
| <i>Rhopalus parumpunctatus</i> (SCHILL., 1817) | P | 23 | 12 |
| <i>Rhopalus conspersus</i> (FIEB., 1836) | EU | - | 9 |
| <i>Rhopalus subrufus</i> (GMEL., 1788) | Kp | 2 | 5 |
| <i>Brachycarenum tigrinus</i> (SCHILL., 1817) | M | 4 | - |
| <i>Stictopleurus punctatonervosus</i> (GZ., 1778) | P | 11 | 5 |
| <i>Stictopleurus abutilon</i> (ROSSI., 1790) | EU | 10 | 3 |
| <i>Maccevethus lineola</i> (FABR., 1787) | M | - | 4 |
| <i>Myrmus mirmiformis</i> (FALL., 1807) | EU | 3 | - |
| <i>Chrosoma gracile</i> JOSIFOV, 1968 | EU | 7 | - |
| <i>Coptosoma scutellum</i> (GEOFFR., 1785) | P | 94 | - |
| <i>Acanthosoma haemorrhoidale</i> (L., 1758) | EU | 1 | - |
| <i>Thyreocoris scarabaeoides</i> (L., 1758) | M | 10 | - |
| <i>Cydnus atterimus</i> (FORSTER, 1771) | P | 1 | 2 |

Sampling territories

| Species | | S-h | NE-h |
|--|------|-----|------|
| Canthophorus biguttatus (L., 1758) | P(M) | - | 3 |
| Canthophorus melanopterus (HERR.-SCHAFF.) | P(M) | - | 2 |
| Canthophorus dubius (SCOP., 1763) | M | 16 | 2 |
| Tritomegas sexmaculatus (RAMBUR, 1842) | M | 7 | 5 |
| Odontoscelis fuliginosa (L., 1761) | P | 3 | - |
| Odontotarsus purpureolineatus (ROSSI., 1790) | M | 9 | 3 |
| Psacasta neglecta (HERR.-SCHAFF., 1837) | M | 2 | - |
| Eurygaster austriaca (SCHRK., 1778) | P | 5 | 2 |
| Eurygaster maura (L., 1758) | P | 13 | 7 |
| Eurygaster testudinaria (GEOFFR., 1785) | P | 2 | - |
| Vilpianus gallii (WFF., 1902) | M | 11 | 6 |
| Graphosoma lineatum (L., 1758) | E | 8 | 6 |
| Sciocoris microphthalmus FLOR, 1860 | EU | 1 | - |
| Sciocoris cursitans (FABR., 1794) | P-N | 4 | - |
| Sciocoris deltocephalus FIEB., 1861 | M | 2 | - |
| Sciocoris sulcatus FIEB., 1851 | M | 3 | 2 |
| Dyroderes umbraculatus (FABR., 1775) | M | 2 | - |
| Aelia acuminata (L., 1758) | P | 35 | 9 |
| Aelia rostrata (BOHEMAN, 1852) | E | 3 | 1 |
| Aelia klugi (HAHN, 1831) | E | - | 2 |
| Neottiglossa leporina (HERR.-SCHAFF., 1830) | EU | 18 | - |
| Stagonomus bipunctatus (L., 1758) | M | 1 | 8 |
| Rubiconia intermedia (WFF., 1811) | EU | 1 | - |
| Staria lunata (HAHN, 1835) | M | 13 | 8 |
| Holcostethus (Peribalus) vernalis (WFF., 1804) | P | 5 | 2 |
| Holcostethus (Peribalus) sphacelatus (FABR., 1775) | P(M) | - | 1 |
| Palomena prasina (L., 1761) | EU | 1 | - |
| Anthemina lunulata (GZ., 1778) | M | 6 | - |
| Carpocoris purpureipennis (DE GEER, 1773) | P | 1 | - |
| Carpocoris pudicus (PODA, 1761) | E | - | 1 |
| Carpocoris fuscispinus (BOH, 1850) | P-W | - | 3 |
| Dolycoris baccarum (L., 1758) | P | 8 | 9 |
| Eurydema ventrale KOLENATI, 1846 | M | 7 | 5 |
| Eurydema dominulus (SCOP.) | Eu | - | 2 |
| Eurydema oleraceum (L., 1758) | P | 14 | - |
| Bagrada stolata HORV., 1936 | M | 1 | - |
| Rhaphigaster nebulosa (PODA., 1761) | EU | 1 | - |

S-h: Sár-hillN-E-h: Nagy-Eged-hill

E: European faunal-element;

H: Holarctic faunal-element;

Kp: Cosmopolitan faunal-element;

P-N: Palearctic North faunal-element;

Eu: Euro-Sziberian faunal-element;

M: Mediterranean faunal-element;

P: Palearctic faunal-element;

P-W: Palearctic West faunal-element

Table II.

Number of species occurring og both sampling territories

| | |
|---|----|
| <i>Nabis ferus</i> (L., 1758) | EU |
| <i>Nabis rugosus</i> (L., 1758) | Eu |
| <i>Capsodes gothicus</i> (L., 1758) | P |
| <i>Brachycoleus scriptus</i> (FABR., 1803) | EU |
| <i>Lasiacantha capucina</i> (GERM., 1836) | M |
| <i>Copium clavicorne</i> (L., 1758) | M |
| <i>Rhinocoris iracundus</i> (PODA, 1761) | P |
| <i>Phymata crassipes</i> (FABR., 1775) | M |
| <i>Ischnodemus sabuleti</i> (FALL., 1829) | P |
| <i>Gonocerus acuteangulatus</i> (GZ., 1778) | EU |
| <i>Syromastes rhombeus</i> (L., 1767) | P |
| <i>Coreus marginatus</i> (L., 1758) | P |
| <i>Spathocera lobata</i> (HERR.-SCHAFF., 1804) | M |
| <i>Alydus calcaratus</i> (L., 1758) | EU |
| <i>Camptopus lateralis</i> (GERM., 1817) | M |
| <i>Rhopalus parumpunctatus</i> (SCHILL., 1817) | P |
| <i>Rhopalus subrufus</i> (GMEL., 1788) | Kp |
| <i>Stictopleurus punctatonervosus</i> (GZ., 1778) | P |
| <i>Stictopleurus abutilon</i> (ROSSI, 1790) | EU |
| <i>Corizus hyoscyami</i> (L., 1758) | P |
| <i>Canthophorus dubius</i> (SCOP., 1763) | M |
| <i>Cydnus atterimus</i> (FORSTER, 1771) | P |
| <i>Tritomegas sexmaculatus</i> (RAMBUR, 1842) | M |
| <i>Odontotarsus purpulineatus</i> (ROSSI, 1790) | M |
| <i>Eurygaster austriaca</i> (SCHRK., 1778) | P |
| <i>Eurygaster maura</i> (L., 1758) | P |
| <i>Vilpianus gallii</i> (WFF., 1902) | M |
| <i>Graphosoma lineatum</i> (L., 1758) | E |
| <i>Sciocoris sulcatus</i> FIEB., 1861 | M |
| <i>Aelia acuminata</i> (L., 1758) | P |
| <i>Aelia rostrata</i> (BOHEMAN, 1852) | E |
| <i>Stagonomus bipunctatus</i> (L., 1758) | M |
| <i>Staria lunata</i> (HAHN., 1835) | M |
| <i>Holcostethus vernalis</i> (WFF., 1804) | P |
| <i>Eurydema ventrale</i> KOLENATI, 1846 | M |
| <i>Dolycoris baccarum</i> (L., 1758) | P |

Materral and methods

During our investigations the distribution of Heteroptera species according to the zoogeographical faunal centurms have been analysed in the case of both collecting sites [Fig. 1., 2., 3.]

Determination of species were done by the help of the works of Benedek, P. (1969), Halászfy, É. (1959), Heiss, E.-Josifov, M. (1990), Kiricsenko, A. H. (1951), Kis, B. (1984), Picskov, V. G. (1965), Soós, Á. (1963), Vásárhelyi, T. (1983 a, b), Wagner, E. (1952), Wagner, E. (1966).

On the basis of the authors' previous studies and the present investigations there were separated species which according to the classical zoogeographical ranging can be placed into the Palearctic faunal centrum, but on the basis of the above listed literature their further classification also can be done.

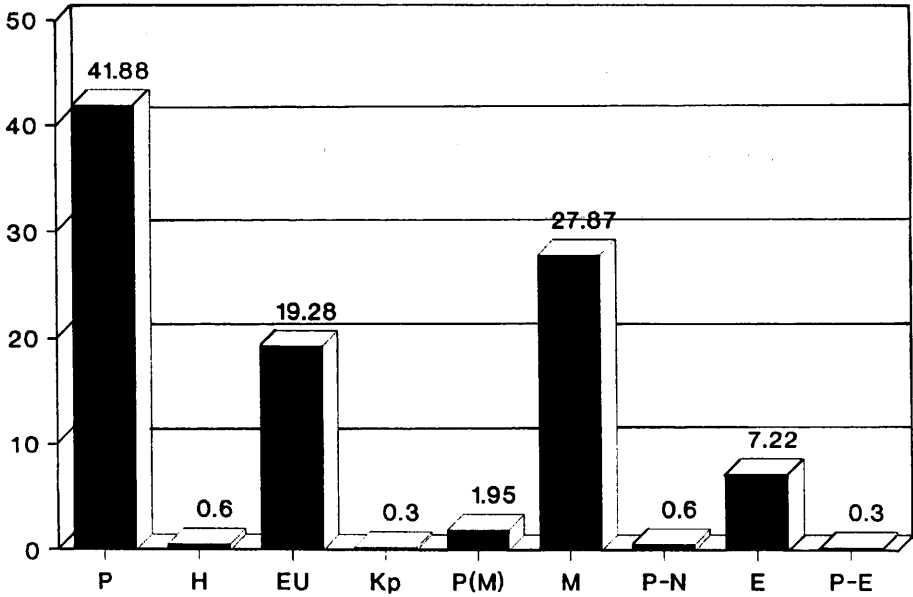


Fig.1. Zoogeographical faunal-element frequency distribution of Heteroptera species collected at Sár-hill

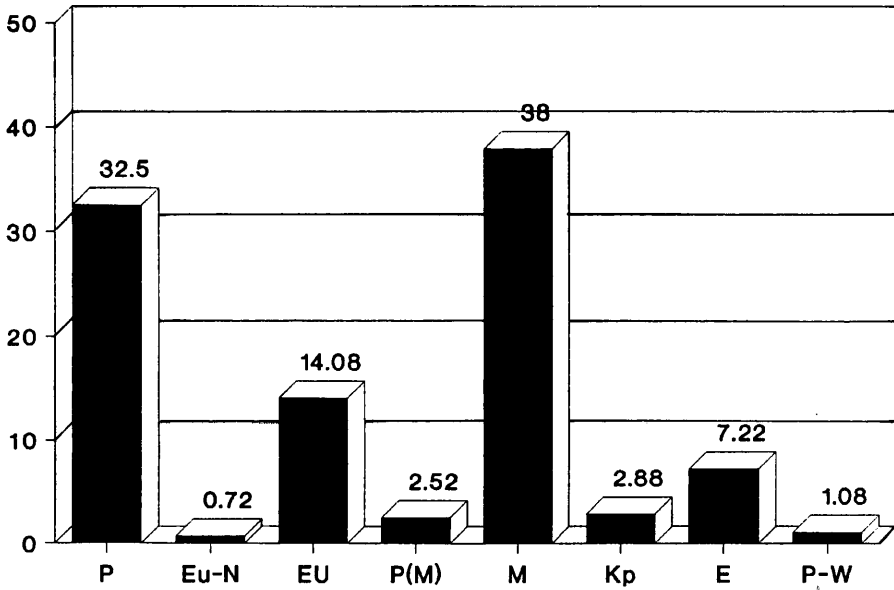


Fig.2. Zoogeographical fauna-element frequency distribution of Heteroptera species collected at Nagy-Eged-hill

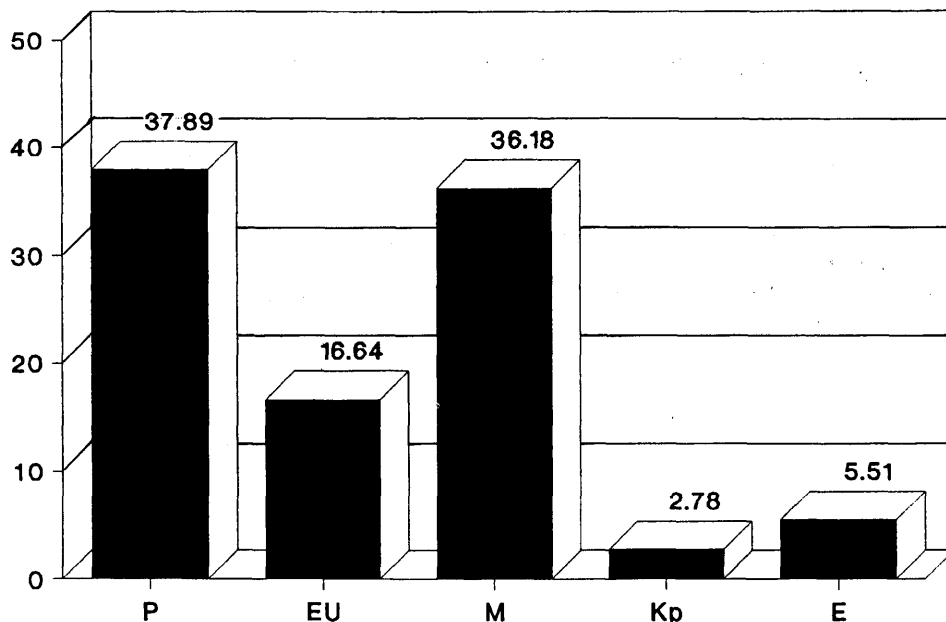


Fig.3. Zoogeographical faunal-element frequency distribution of Heteroptera species occurring at both sampling territories

Results

The following "work name" was given to these faunal centums: Palearctic (Northern), Palearctic (European) and palearctic (Mediterranean).

Exact description of these categories needs further faunal examinations. On the basis of these statements the faunas of the examined territories can be characterized in the following way: *Heteroptera* species found at the territory of Sár-hill can be ranged into 9 faunal centums. The distribution of faunal element frequency among the different species is the following: Palearctic species 41.9 % [Palearctic (Mediterranean) 2.0 %; Palearctic (European) 0.3 %], Mediterranean species 27.9 % [Eurosiberian 19.3 %, European 7.2 %; cosmopolitan 0.3 %]. (Fig.1.)

Heteroptera species found at the Nagy-Eged-hill belongs into 8 faunal centums. Distribution of faunal element frequency is the following: Mediterranean species 38 %; Palearctic species 32.5 %; Palearctic (Mediterranean) 2.52 % Palearctic (Western) 1.08 %; Eurosiberian 14.08 %; Eurosiberian (Northern) 0.72 %; European 7.22 %; cosmopolitan 2.88 % (Fig. 2.).

On the basis of the results we can state, that the two sampling territories, situated on the southern part of the Nort-Hungarian Medium High Mountain Ranges considering their microclimatic features and *Heteroptera* species can be characterised as s Submediterranean island.

The collected material is kept in the collection of Mátra Museum, Gyöngyös and Károly Eszterházy Teachers' Training College, Department of Zoology, Eger.

Összefoglalás

A Sár-hegy és a Nagy-Eged-hegy a Magyar Középhegység déli peremén húzódó "szubmediterrán szigetnek" tekinthetők. Ezt mikrolimatikus viszonyaik, a területek botanikai felmérései is egyaránt alátámasztják. Területén végzett Heteropterológiai vizsgálatok, a begyűjtött fajok

zoogeográfiai faunacentrum szerinti megoszlása is igazolják. Mind a két mintavételi területen magasnak ítéltető a palearktikus (mediterrán) és a mediterrán fajok részesedése.

References

- BENEDEK, P. (1969): Poloskák VII. Heteroptera VII., Magyarország Állatvilága (Fauna Hungariae) – Fol. Ent. Hung. 17 (7): 1-86.
- BENEDEK, P. (1969): A magyarországi Nabidae (Heteroptera) fajok lárváinak elterjedése és etológiai adatai. – Fol. Ent. Hung. 22: 475-578.
- FÖLDESSY, M. (1991): A Sár-hegy Heteroptera faunájának állatföldrajzi vizsgálata. – Fol. Hist. Nat. Matr. 16: 71-73.
- FÖLDESSY, M. – VARGA, J. (1995): A comparison of the Heteroptera associations of plant communities exposed in the same way in the Bükk and the Mátra mountains. – Abstracts: 7th. European Ecological Congress p. 218.
- HALÁSZFY, É. (1959): Heteroptera II. Poloskák II. – Magyarország Állatvilága (Fauna Hungariae) 17. (2): 1-87.
- HEISS, B. – JOSIFOV, M. (1990): Vergleichende Untersuchung über Artenspektrum, Zoogeographie und Ökologie der Heteropteran. Fauna in Hochgebirgen Österreichs und Bulgariens. – Ber. Nat.-med. Ver. Innsbruck 77: 123-161.
- KRICSENKO, A. H. (1951): Nasztojasie poluzsesztkokrúlie evropejszkoj csaszti (Hemiptera). – Izd. Akad. Nauk. Kirg. SzSzSzR. Leningrad p: 1-400.
- KIS, B. (1984): Fauna Republicii Socialite Romania. Insecta 8: Heteroptera Pastae Generalo Pentatomidae. – Acad. Rep. Soc. Rom. p: 1-216.
- PICSKOV, V. G. (1965): Sitniki Szregnej Azsii. – Akad. Nauk. Kirg. SzSzSzR. Frunze p: 1-330.
- SOUTHWOOD, T. (1984): Ökológiai módszerek különös tekintettel a rovarpopulációk tanulmányozására. – Mezőgazd. Kiadó p: 1-134.
- SOÓS, Á. (1963): Poloskák VIII. Heteroptera VIII. – Magyarország Állatvilága (Fauna Hungariae) 17 (8): 1-48.
- VÁSÁRHELYI, T. (1983): Poloskák V. Heteroptera V. – Magyarország Állatvilága (Fauna Hungariae) 17 (5): 1-76.
- VÁSÁRHELYI, T. (1983): Poloskák III. Heteroptera III. – Magyarország Állatvilága (Fauna Hungariae) 17 (3): 1-88.
- WAGNER, E. (1952): Blindwanzen der Miriden. – Die Tierwelt Deutschlands 41: 1-218.
- WAGNER, E. (1966): Wanzen oder Heteropeten I. Pentatomorpha. – Die Tierwelt Deutschlands 54: 1-235.

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