

# FURTHER DATA ON THE TRUE BUG FAUNA (INSECTA: HETEROPTERA) OF ALKALINE GRASSLANDS IN THE HUNGARIAN-ROMANIAN BORDER REGION

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## Introduction

In the framework of HURO projects, several studies were carried out to reveal the effect of the land use practices, the landscape characteristics and the structure of vegetation on the invertebrate fauna in a transborder region between Hungary and Romania (e.g. Lőrinczi *et al.* 2011, Lőrinczi 2011, Szikora *et al.* 2012, Gallé *et al.* in this issue).

In the year of 2010 a faunistic survey was carried out in order to reveal the invertebrate fauna of alkaline grasslands in the region. Some faunistical results of various taxa including Heteroptera were already presented (e.g. Lőrinczi 2011, Lőrinczi *et al.* 2011). Even though various collecting methods were applied (i.e. pit-fall trapping, vacuum sampling, sweep netting), mostly the catching data of pit-fall traps were published in the work of Lőrinczi *et al.* (2011). Thus, the number of true bug species and specimens were rather low comparing to other arthropod groups e.g. spiders and ants. Several studies found that the most effective collecting method of true bugs is sweep netting (e.g. Remane 1958, Standen 2000, Coscaron *et al.* 2009). Although Standen (2000) stated that pitfall trap sampling was not necessary to estimate the species richness of true bugs in grasslands, in the case of ground-dwelling and cryptic species pitfall trapping is a suitable sampling method in the sense of both faunistical (e.g. Torma 2005) and ecological (e.g. Torma and Körmöczi 2009) aspects. In this point of view, the low number of true bug species published by Lőrinczi *et al.* (2011) was an acceptable result, but for a complete faunistical study, sweep netting is a necessary collecting method. Thus, the aim of the present work was to complete the list of the collected true bug species in alkaline meadows in the Hungarian-Romanian border region according to the sweep net sampling.

## Materials and methods

In the previous issue of this monograph series (Körmöczi 2011), several studies were published in which the landscape history, the characteristics (i.e. land use type, vegetation and geomorphology) of Gyula-Várşand region as well as the

methodology of the project were discussed. Thus, in the Materials and methods section, only the sites sampled by sweep netting were listed again.

Gyula I.: (1) loess steppe and salt meadow; (2) salt meadow; (3) salt meadow and *Artemisia* salt steppe; (4) loess steppe; (5) Pannonic *Camphorosma* hollow and dense and tall *Puccinellia* sward with salt meadow; (6) salt meadow; (7) *Artemisia* salt steppe with dense and tall *Puccinellia* sward patches and Pannonic *Camphorosma* hollow; (8) loess steppe patches; (9) transition from *Artemisia* salt steppe to dense and tall *Puccinellia* sward; (10) salt meadow.

Várşand (Gyulavarsány): (11) *Achillea* salt steppe with loess steppe patches; (12) uncharacteristic grassland; (13) *Artemisia* salt steppe with salt meadow patches and salt meadow with *Artemisia* salt steppe patches; (14) loess steppe;

Pilu (Nagypél): (15) uncharacteristic grassland (or degraded loess steppe); (16) degraded loess steppe; (17) *Achillea* salt steppe with *Artemisia* salt steppe patches; (18) *Artemisia* salt steppe and salt meadow with loess steppe patches; (19) *Artemisia* salt steppe with salt meadow patches and Pannonic *Camphorosma* hollow; (20) salt meadow with uncharacteristic grassland.

Gyula II.: (21) alkaline grassland (22); degraded loess steppe; (23) degraded loess steppe; (24) uncultivated old alfalfa field; (25) grassland strip near the alfalfa field; (26); grassy undergrowth vegetation in an orchard; (27) grassland strip between corn fields; (28) uncharacteristic, disturbed grassland (29) uncharacteristic, disturbed grassland;

## Results and discussion

A total number of 3818 adult individuals of 110 true bug species representing 14 families were collected by sweep-netting (Table 1). The occurrence of 24 species of them was already published by Lőrinczi *et al.* (2011) according to the pitfall-trap and D-Vac samplings. Taking into account the total faunistical survey, 140 true bug species were recorded, altogether. Some records were worth to highlight. *Aoploscelis bivirgata* (A. Costa, 1853) is a Ponto-Mediterranean species. The south part of the Great Hungarian Plain is presumably the northern edge of its distribution area. It is relatively frequent in the Bánság (Romania and Serbia), however only one data is known from Hungary (Torma 2005). As the collecting site (Várşand) is situated close to the Hungarian-Romanian border, *A. bivirgata* presumably lives also in the Hungarian part of the region, especially in the grasslands nearby Gyula. Further important result of the faunistic survey was the first record of *Ochetostethus balcanicus* (Wagner, 1940) in Hungary (Torma and Rédei in press). Although the specimens were collected near Magyarcsanak, the authors supposed the occurrence of species nearby Gyula, too. Present record of the species, in a salt meadow near to Gyula, verified their assumption.

The Hungarian true bug fauna is relatively well-known, especially that of the protected, natural areas (e.g. Bakonyi and Vásárhelyi 1981, 1987, 1993, Bakonyi

*et al.* 2002, Földessy 1987, 1998, Földessy *et al.* 1999, Harmat 1986a, b, 1993, Kondorosy and Kis 1996, Kondorosy and Harmat 1997, Kondorosy and Földessy 1998, Kondorosy 2000, 2001, 2003, Vásárhelyi 1983, 1985, Vásárhelyi *et al.* 1990), but the south-eastern part of the Great Hungarian Plain is poorly studied in spite of the fact that the area of Körös-Maros National Park is situated in the region. Only a few work provided data about the true bug fauna of this region. Harnos *et al.* (2000) reported the occurrence of 105 true bug species, including some very rare ones and Torma (2005) published three new species for the Hungarian fauna. The results of the faunistical surveys in the region (e.g. the new species for the Hungarian fauna) highlighted that our knowledge about the true bug fauna of the south-eastern part of the Great Hungarian Plain is poor.

Table 1. List of the true bug species collected by sweep netting. No. - number of collected specimens; Site - marks of the collecting sites (For the marks of sites see Materials and methods section).

Taxa	No.	Site
<b>Tingidae</b>		
<i>Agramma atricapillum</i> (Spinola, 1837)	2	20, 26
<i>Agramma confusum</i> Puton, 1879	11	1, 9, 12, 15, 17
<i>Catoplatus carthusianus</i> (Goeze, 1778)	2	18
<i>Dictyla humuli</i> (Fabricius, 1794)	5	15, 21, 24, 25, 29
<i>Lasiacantha c. capucina</i> (Germar, 1836)	2	20, 24
<i>Lasiacantha gracilis</i> (Herrich-Schäffer, 1838)	6	1
<i>Oncochila scapularis</i> (Fieber, 1844)	1	18
<i>Oncochila simplex</i> (Herrich-Schäffer, 1830)	1	16
<i>Tingis (s. str.) auriculata</i> (Costa, 1843)	7	3, 5
<b>Miridae</b>		
<i>Acetropis carinata</i> (Herrich-Schäffer, 1842)	38	1, 3, 4, 5, 6, 7, 8, 9
<i>Adelphocoris lineolatus</i> (Goeze, 1778)	168	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 20, 21, 24, 28, 29
<i>Amblytylus nasutus</i> (Kirschbaum, 1856)	111	1, 2, 3, 4, 5, 6, 7, 8, 9,
<i>Campylomma verbasci</i> (Meyer-Dür, 1843)	1	12

Taxa	No.	Site
<i>Charagochilus gyllenhali</i> (Fallén, 1807)	1	1
<i>Chlamydatus pulicarius</i> (Fallén, 1807)	3	29
<i>Chlamydatus pullus</i> Reuter, 1870	6	12, 15, 29
<i>Conostethus hungaricus</i> E. Wagner, 1941	260	5, 7, 8, 9
<i>Criocoris crassicornis</i> (Hahn, 1834)	7	1
<i>Criocoris sulcicornis</i> (Kirschbaum, 1856)	106	1, 4, 7
<i>Halticus apterus</i> (Linnaeus, 1761)	49	1, 3, 14, 15, 20, 25, 26, 29
<i>Leptoterna dolabrata</i> (Linnaeus, 1758)	1	6
<i>Leptoterna ferrugata</i> (Fallén, 1807)	1	9
<i>Lygus gemellatus</i> (Herrich-Schäffer, 1835)	12	3, 5, 12, 21
<i>Lygus pratensis</i> (Linnaeus, 1758)	12	3, 5, 14, 20, 21, 24, 26, 29
<i>Lygus rugulipennis</i> Poppius, 1911	17	3, 5, 12, 21, 24
<i>Macrotylus paykulli</i> (Fallén, 1807)	1	14
<i>Megaloceroea reticornis</i> (Geoffroy, 1785)	1	7
<i>Megalocoleus molliculus</i> (Fallén, 1829)	5	5, 15, 18
<i>Notostira elongata</i> (Geoffroy, 1785)	75	2, 3, 16, 21, 25, 26, 27, 28, 29
<i>Orthocephalus saltator</i> (Hahn, 1835)	6	15, 16, 20
<i>Orthops basalis</i> (Costa, 1852)	1	12
<i>Orthops kalmii</i> (Linnaeus, 1758)	6	25, 29
<i>Orthotylus flavosparsus</i> (F. Sahlberg, 1842)	17	1, 5, 21
<i>Phytocoris insignis</i> Reuter, 1876	1	8
<i>Phytocoris varipes</i> Boheman, 1852	2	6, 12
<i>Plagiognathus bipunctatus</i> Reuter, 1883	52	3, 5, 14
<i>Plagiognathus chrysanthemi</i> (Wolff, 1804)	1	20
<i>Plagiognathus fulvipennis</i> (Kirschbaum, 1856)	2	7, 20

<b>Taxa</b>	<b>No.</b>	<b>Site</b>
<i>Plagiognatus sp.</i>	6	5
<i>Polymerus brevicornis</i> (Reuter, 1878)	19	1, 3, 4, 14
<i>Polymerus holosericeus</i> (Hahn, 1831)	2	1
<i>Polymerus unifasciatus</i> (Fabricius, 1794)	18	1, 3, 4, 20
<i>Polymerus vulneratus</i> (Panzer, 1806)	130	1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 21, 24,
<i>Solenoxiphus fuscovenosus</i> (Fieber, 1864)	2	5, 6
<i>Stenodema calcaratum</i> (Fallén, 1807)	322	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29
<i>Teratocoris sp.</i>	1	8
<i>Trigonotylus caelestialium</i> (Kirkaldy, 1902)	210	3, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 28, 29
<i>Trigonotylus pulchellus</i> (Hahn, 1834)	1064	1, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 28, 29
<b>Anthocoridae</b>		
<i>Orius (Heterorius) horvathi</i> (Reuter, 1884)	1	3
<i>Orius (Heterorius) minutus</i> (Linnaeus, 1758)	1	5
<i>Orius (s. str.) niger</i> Wolff, 1804	10	3, 12, 24, 28
<b>Nabidae</b>		
<i>Nabis (s. str.) p. punctatus</i> Costa, 1847	15	3, 5, 6, 21, 24, 25
<i>Nabis (s. str.) p. pseudoferus</i> Remane, 1949	124	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29
<i>Nabis pseudoferus / punctatus</i> ♀	81	1, 2, 3, 6, 7, 8, 10, 11, 12, 13, 15, 16, 17, 20, 21, 24, 25, 26, 27, 28, 29
<b>Berytidae</b>		
<i>Berytinus sp.</i>	1	17
<i>Berytinus clavipes</i> (Fabricius, 1775)	2	29
<i>Berytinus minor</i>	6	2, 18, 26, 29

<b>Taxa</b>	<b>No.</b>	<b>Site</b>
<i>Berytinus montivagus</i> (Meyer-Dür, 1841)	2	2
<i>Neides tipularius</i> (Linnaeus, 1758)	1	25
<b>Piesmatidae</b>		
<i>Piesma capitatum</i> (Wolff, 1804)	1	17
<i>Piesma maculatum</i> (Laporte, 1832)	2	5, 20
<i>Piesma quadratum</i> (Fieber, 1844)	1	19
<b>Lygeaidae sensu lato</b>		
<i>Aoploscelis bivirgata</i> (A. Costa, 1853)	1	12
<i>Dimorphopterus doriae</i> (Ferrari, 1874)	8	12, 14, 17, 28
<i>Geocoris</i> ( <i>s. str.</i> ) <i>grylloides</i> (Linnaeus, 1758)	3	3
<i>Henestaris halophilus</i> (Burmeister, 1835)	133	5, 6, 7, 9, 21
<i>Ischnodemus sabuleti</i> (Fallén, 1829)	6	2, 27
<i>Kleidocerys resedae</i> (Panzer, 1797)	1	4
<i>Lygaeosoma anatolicum</i> Seidenstücker, 1960	2	7
<i>Metopoplax origani</i> (Kolenati, 1845)	73	5, 7, 19, 20
<i>Nysius ericae</i> (Schilling, 1829)	1	5
<i>Nysius senecionis</i> (Schilling, 1829)	110	3, 5, 6, 7, 10, 15, 17, 18, 20, 21
<i>Ortholomus punctipennis</i> (Herrich-Schäffer, 1839)	3	3, 28
<i>Oxycarenum pallens</i> (Herrich-Schäffer, 1850)	4	3, 29
<i>Peritrechus gracilicornis</i> (Puton, 1877)	1	4
<i>Peritrechus nubilus</i> (Fallén, 1807)	2	5, 6
<i>Platyplax salviae</i> (Schilling, 1829)	4	20
<i>Pterotmetus staphyliniformis</i> (Schilling, 1829)	3	11, 25, 29
<i>Xanthochilus quadratus</i> (Fabricius, 1798)	5	6, 7, 9

<b>Taxa</b>	<b>No.</b>	<b>Site</b>
<b>Pyrrhocoridae</b>		
<i>Pyrrhocoris marginatus</i> (Kolenati, 1845)	2	8, 9
<b>Alydidae</b>		
<i>Alydus calcaratus</i> (Linnaeus, 1758)	1	26
<i>Camptopus lateralis</i> (Germar, 1817)	19	3, 6, 7, 8, 9, 20, 25
<b>Rhopalidae</b>		
<i>Brachycarenum tigrinus</i> (Schilling, 1817)	4	12
<i>Chorosoma schillingii</i> (Schummel, 1829)	10	3, 6, 7, 21
<i>Corizus hyoscyami</i> (Linnaeus, 1758)	8	2, 5, 14, 15, 20, 25
<i>Liorhyssus hyalinus</i> (Fabricius, 1794)	2	5, 12
<i>Myrmus miriformis</i> (Fallén, 1807)	24	1, 2, 3, 4, 10, 20, 25, 28, 29
<i>Rhopalus parumpunctatus</i> (Schilling, 1817)	78	1, 3, 5, 6, 7, 9, 12, 13, 15, 16, 18, 20, 21, 29
<i>Stictopleurus abutilon</i> (Rossi, 1790)	7	8, 12, 15, 18, 20
<i>Stictopleurus punctatonervosus</i> (Goeze, 1778)	10	5, 6, 7, 13, 21
<b>Coreidae</b>		
<i>Ceraleptus gracilicornis</i> (Herrich-Schäffer, 1835)	1	4
<i>Coreus marginatus</i> (Linnaeus, 1758)	1	5
<i>Spathocera lobata</i> (Herrich-Schäffer, 1840)	2	4, 9
<b>Cydnidae</b>		
<i>Ochetostethus balcanicus</i> (Wagner, 1940)	6	6, 15, 16
<b>Scutellaridae</b>		
<i>Eurygaster maura</i> (Linnaeus, 1758)	23	1, 2, 3, 5, 7, 8, 9, 24, 26, 28, 29
<b>Pentatomidae</b>		
<i>Aelia acuminata</i> (Linnaeus, 1758)	51	1, 2, 3, 4, 6, 7, 8, 9, 25, 29
<i>Aelia rostrata</i> Boheman, 1852	14	3, 5, 6, 9, 15, 16, 20

Taxa	No.	Site
<i>Antheminia lunulata</i> (Goeze, 1778)	12	5, 6, 7, 9, 20, 21, 28
<i>Carpocoris fuscispinus</i> (Boheman, 1850)	2	5, 8
<i>Carpocoris purpureipennis</i> (De Geer, 1773)	7	2, 14, 15, 20, 25, 29
<i>Dolycoris baccarum</i> (Linnaeus, 1758)	59	2, 3, 5, 6, 7, 8, 12, 13, 14, 15, 18, 20, 25, 29
<i>Eurydema oleraceum</i> (Linnaeus, 1758)	9	5, 14, 16; 20, 21, 29
<i>Eurydema ornatum</i> (Linnaeus, 1758)	13	5, 20
<i>Eusarcocoris ventralis</i> (Westwood, 1837)	2	7, 21
<i>Graphosoma lineatum</i> (Linnaeus, 1758)	1	1
<i>Holcostethus vernalis</i> (Wolff, 1804)	1	20
<i>Piezodorus lituratus</i> (Fabricius, 1794)	4	24, 26, 29
<i>Podops inuncta</i> (Fabricius, 1775)	1	7
<i>Sciocoris cursitans</i> (Fabricius, 1794)	1	2
<i>Sciocoris distinctus</i> Fieber, 1851	1	6
<i>Vilpianus galii</i> (Wolff, 1802)	60	1, 3, 4

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