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COLLEMBOLA FROM SĂLAJ (ROMANIA)

László Dányi
Hungarian Natural History Museum, Department of Zoology

ABSTRACT. The paper presents some new contributions to the Collembola fauna of the county Sălaj in Transylvania (Romania), a region the springtails of which is practically unexplored. 19 species are reported, one of them (*Sminthurus nigromaculatus* Tullberg, 1871) is new to the fauna of Romania.

Keywords: springtails, faunistic, Transylvania.

INTRODUCTION:

Although there are a lot of studies published on the Collembola fauna of Romania (cf. Fiera 2007), our knowledge in this field is still probably very far from complete. This is also indicated by the numerous recent discoveries of Romanian species new for the country's fauna (Dányi et al. 2006, Dányi & Traser 2008, Fiera 2008, Fiera & Weiner 2013, Nitzu et al. 2009, Popa 2010a, 2010b, 2012, 2013) or for science (Dányi & Traser 2008a, Fiera et al. 2013, Radwański et al. 2006, Weiner & Fiera 2014). Further interesting results might be also expected, because several regions of the country have hardly been studied yet. One of these unexplored areas is the county Sălaj in Transylvania, from where I could not find any data on springtails in literature. A faunistical investigation has been carried out in the frame of a cooperation between the Hungarian Natural History Museum and the University Vasile Goldiş during 2014-2015. The first results of this study are presented here, focusing on Symphypleona and some families of Entmobryomorpha (Entomobryidae, Lepidocyrtidae, Orchesellidae, Tomoceridae) only.

MATERIAL AND METHODS:

Soil, litter and moos samples were collected and extracted using Berlese-Tullgren funnel. Singling and D-Vac method (leaf hoover) was used as well. The identified specimens are deposited in the Soil Zoology Collections of the Hungarian Natural History Museum (HNHM). For light microscopy, specimens were cleared in a mixture of lactic acid and glycerol (3:1), and examined under a Leica DM 1000 microscope with phase contrast optics and with a Nikon Eclipse 80i microscope. For using 1000x magnification with oil immersion, specimens were mounted in Hoyer's medium on permanent slides. Photos were made using a Nikon Coolpix E995 camera attached to a Leica MZ75 stereomicroscope.

RESULTS:

PODUROMORPHA

Onychiuridae

***Tetrodontophora bielanensis* Waga, 1842**

Locality: Tusa (Tuszatelke), Ponor, N47°01.158', E22°41.979', 805m, spruce forest with a pond, 02.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.121); Meseş Mts, Huta (Csákyújfalu), N46°59.650', E22°55.688', 560m, beech forest with stream, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.115); Munții Meseş (Meszes Mts), Poic, 46.994°N, 22.930°E, beech forest, leaf litter sample, 12.V.2015, leg. V. Szőke. (No. 192).

Remark: The species is mentioned for Sălaj county (Gâlgău) by Fiera (2007), but the cited source (Vellay 1900) doesn't contain such record.

ENTOMOBRYOMORPHA

Entomobryidae

***Entomobrya handschini* Stach, 1922**

Locality: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.102).

Remarks: *E. handschini* occurs in an arc from Poland to Iran, to the south-east of the Black Sea (Baquero et al. 2008). It is known from the karstic system of Romania (Gruia 2000).

Lepidocyrtidae

***Lepidocyrtus paradoxus* Uzel, 1890**

Localities: Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116); W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.108).

Remark: Holarctic species occurring mostly in open habitats (Dányi & Traser 2008b).

***Lepidocyrtus violaceus* (Geoffroy, 1762)**

Locality: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.108).

Remark: *L. violaceus* has already been reported from Transylvania more than a century ago as well (Vellay 1900).

Orchesellidae

***Orchesella cincta* (Linnaeus, 1758)** (Figs 1-2)

Locality: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.102).

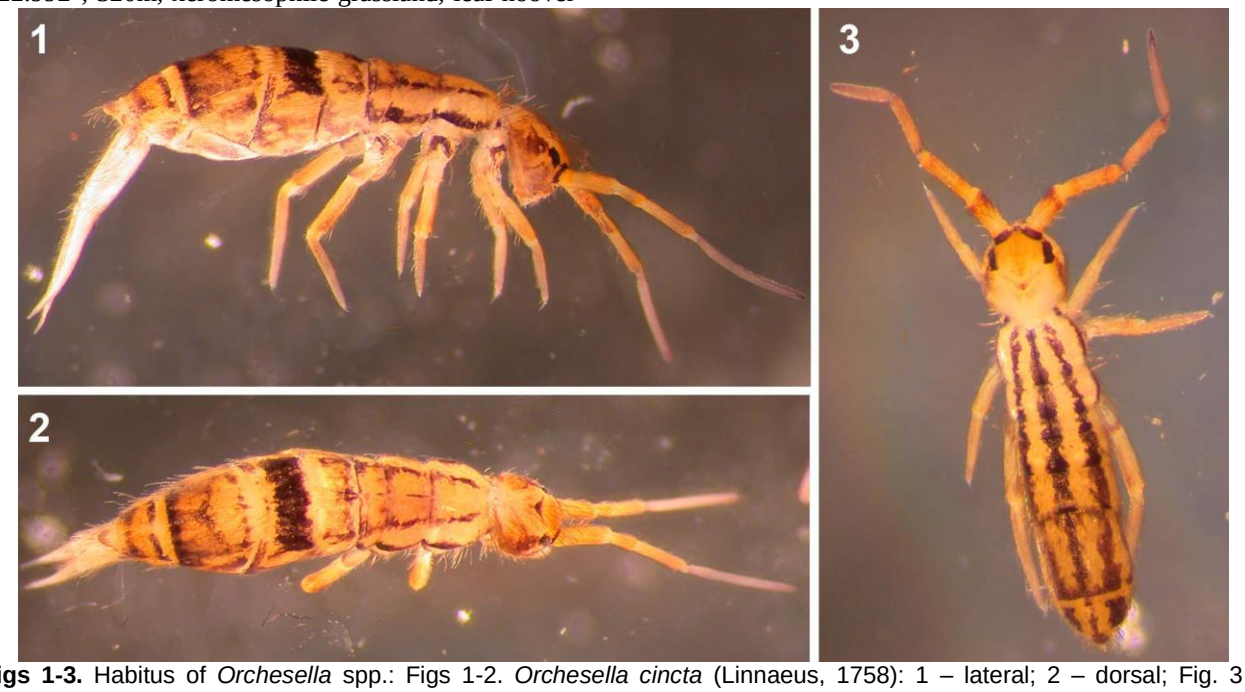
***Correspondence**: Dányi L., Hungarian Natural History Museum, Department of Zoology, Baross u. 13., Budapest, H-1088 Hungary, e-mail: danyi@nhmus.hu*

Remarks: Holarctic species (Dányi & Traser 2008). The specimens from Aghireş have rather pale head and antennae (Figs 1-2).

***Orchesella multifasciata* Stscherbakow, 1898**

Locality: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.108).

Remark: Xerothermophil species according to Dányi & Traser (2008b).



Figs 1-3. Habitus of *Orchesella* spp.: Figs 1-2. *Orchesella cincta* (Linnaeus, 1758): 1 – lateral; 2 – dorsal; Fig. 3 – *Orchesella orientalis* Stach, 1960, dorsal.

***Orchesella pannonica* Stach, 1960**

Locality: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.102).

Remark: Popa (2010) reported this species from Romania first.

***Orchesella orientalis* Stach, 1960** (Fig. 3)

Locality: Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116).

Remark: Eastern-European species (Dányi & Traser 2008b).

Tomoceridae

***Pogonognathellus flavescens* (Tullberg, 1871)**

Locality: Treznea (Ördögkút), main valley of the Treznea Stream, N47°06.603', E23°03.866', 377m, beech forest and pasture, 29.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.99).

Remark: Common woodland species with Holarctic distribution (Fjellberg 2007).

***Tomocerus minor* (Lubbock, 1862)**

Locality: Treznea (Ördögkút), main valley of the Treznea Stream, N47°06.603', E23°03.866', 377m, beech forest and pasture, 29.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.99).

Remark: Cosmopolitan species, common in forests (Fjellberg 2007).

SYMPHYPLEONA

Sminthurididae

***Sphaeridia pumilis* (Krausbauer, 1898)**

Localities: Iaz (Krasznajáz), peat bog and ruines of the bath, N47.111°, E22.659°, 320m, peat bog and ruines of the bath in an oak forest, leaf litter sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D.; (No.104); Munţii Meseş (Meszes Mts), Poic, 46.994°N, 22.930°E, beech forest, leaf litter sample, 12.05.2015, leg. Szőke V. (No.192).

Remark: Mesophilous, cosmopolitan species (Dányi & Traser 2008b, Fjellberg 2007).

Sminthuridae

***Sminthurus multipunctatus* Schäffer, 1896** (Figs 4-5)

Localities: Meseş Mts, Pria (Perje), SW slope of Vf. Măgura Priei (Perjei csúcs), N47°00.240', E22°53.796', 838m, Juncus bog at the edge of beech forest and pasture, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.113); Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116).

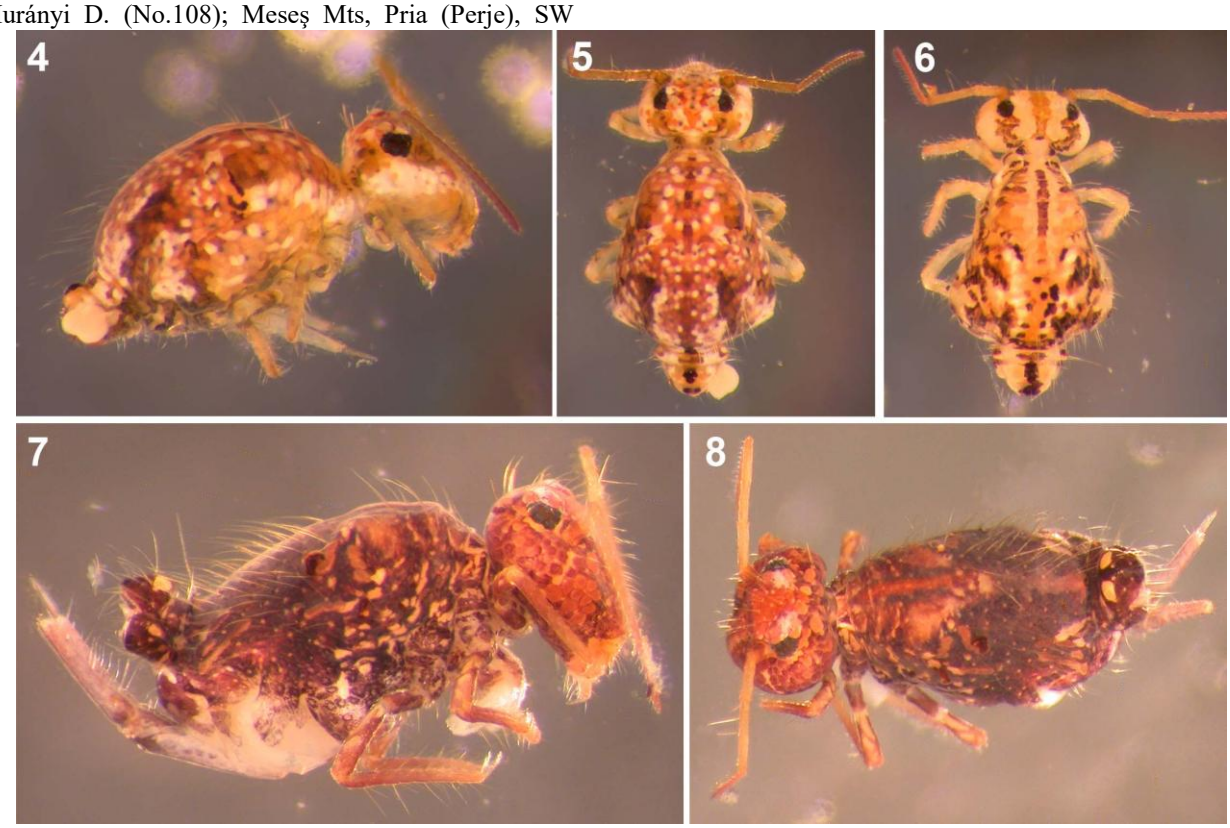
Remarks: *S. multipunctatus* is a xerothermophilous species with Palearctic distribution (Dányi & Traser

2008b). In the material, only the form *albopunctatus* Stach, 1922 was present (Figs 4-5).

***Sminthurus nigromaculatus* Tullberg, 1871** (Figs 7-8)

Localities: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30. 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D.; (No.102); W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.108); Meseş Mts, Pria (Perje), SW slope of Vf. Măgura Priei (Perjei csúcs), N47°00.240', E22°53.796', 838m, *Juncus* bog at the edge of beech forest and pasture, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.113); Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116).

Remarks: *S. nigromaculatus* was not listed for Romania in the catalogue of Fiera (2007), thus this species is new to the fauna of Romania. Grassland species with Holarctic distribution (Bretfeld 1999).



Figs 4-8. Habitus of *Sminthurus* spp.: **Figs 4-6.** *Sminthurus multipunctatus* Schäffer, 1896 var. *albopunctatus* Stach, 1922; 4 – lateral; 5 – same specimen, dorsal; 6 – paler specimen, dorsal; **Figs 7-8**. *Sminthurus nigromaculatus* Tullberg, 1871; 7 – lateral; 8 – dorsal.

***Spatulosminthurus guthriei guthriei* (Stach, 1919)**

Locality: Meseş Mts, Pria (Perje), SW slope of Vf. Măgura Priei (Perjei csúcs), N47°00.240', E22°53.796', 838m, *Juncus* bog at the edge of beech forest and pasture, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.113).

Remarks: First reported from Romania by Gruia (1966). Known from meadows, forest steppes and rocky habitats (Bretfeld 1999). The nominal subspecies has been recorded also in Poland, Bosnia and Herzegovina, Slovakia and Ukraine (Bretfeld 1999).

***Lipothrix lubbocki* (Tullberg, 1872)**

Locality: Munţii Meseş (Meszes Mts), Poic, 46.994°N, 22.930°E, beech forest, leaf litter sample, 12.05.2015, leg. V. Szőke, (No.192).

Remark: Woodland species with Palearctic distribution (Fjellberg 2007).

Katiannidae

***Sminthurinus aureus* (Lubbock, 1862)** (Fig. 6)

Localities: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.102); Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116).

Remarks: Palearctic species (Fjellberg 2007). In the material, only the form *atrata* Börner, 1901 was present (Fig. 6).

***Sminthurinus bimaculatus* (Axelson, 1902)**

Localities: Iaz (Krasznajáz), peat bog and ruines of the bath, N47.111°, E22.659°, 320m, peat bog and ruines of the bath in an oak forest, leaf litter sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D.; (No.104);

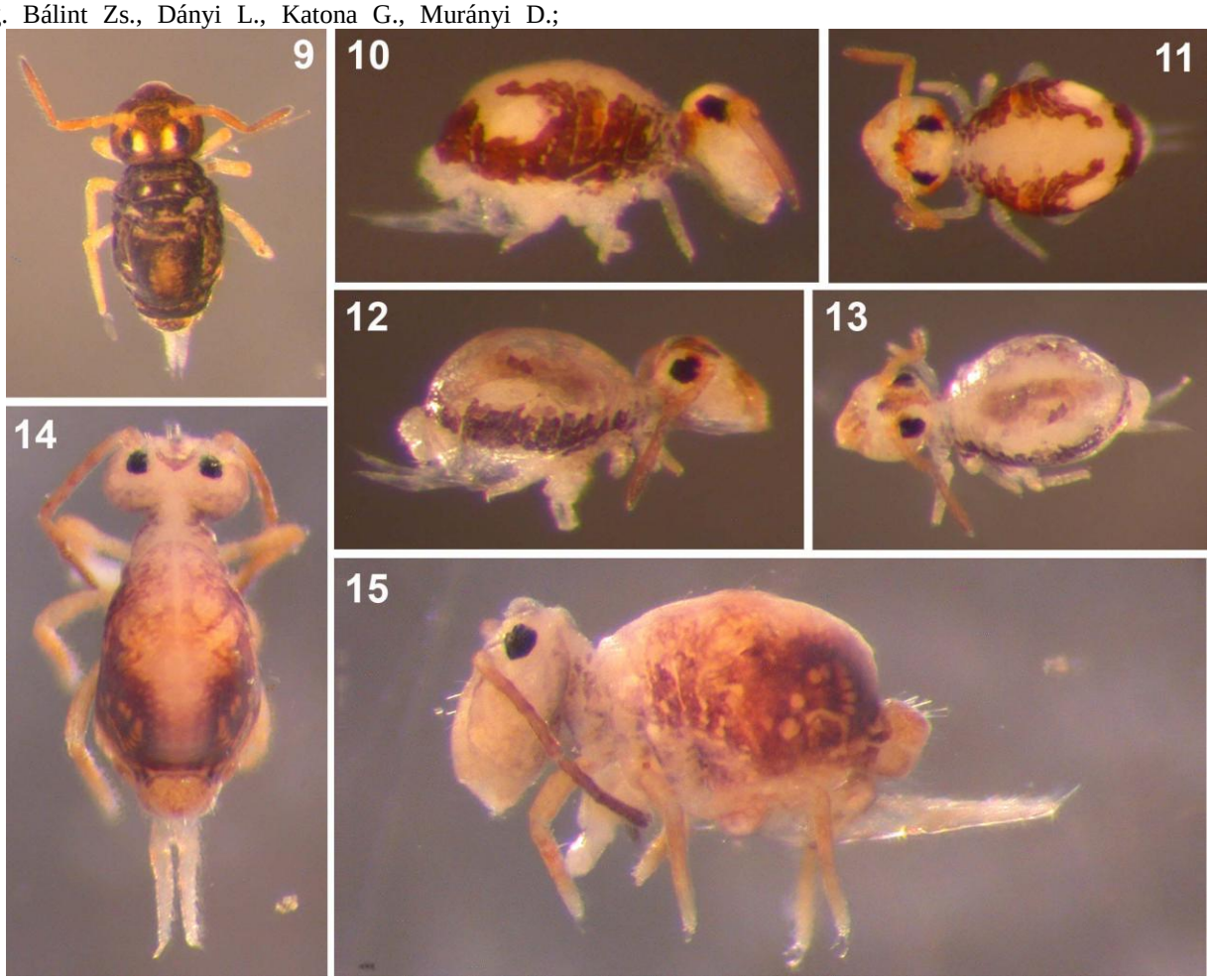
Munţii Meseş (Meszes Mts), Poic, 46.971°N, 22.946°E, spruce plantation, moss sample, 12.V.2015, V. Szőke (No. 191).

Remarks: Palearctic species (Bretfeld 1999).

***Sminthurinus elegans* (Fitch, 1863)**

Localities: W of Aghireş (Egrespatak), N47.157°, E22.992°, 320m, xeromesophile grassland and forest edge, leaf hoover sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.102); Iaz (Krasznajáz), peat bog and ruines of the bath, N47.111°, E22.659°, 320m, peat bog and ruines of the bath in an oak forest, leaf litter sample, 30.09.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D.; (No.104); Meseş Mts, W of Mesteacănu (Almásnyíres), N46°58.021', E22°58.001', 608m, grassland, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.116); Munţii Meseş (Meszes Mts), Poic, 46.971°N, 22.946°E, spruce plantation, moss sample, 12.V.2015, Szőke V. (No. 191).

Remarks: According to Bretfeld (1999) *S. elegans* lives in more open and dryer habitats than *S. aureus*, but our results show opposite situation. On site No. 104 the varietas *dorsalis* Axelson, 1905 occurred, on the other localities we found the usual form.



Figs 9-13. Habitus of *Sminthurinus* spp.: Fig. 9 – *Sminthurinus aureus* (Lubbock, 1862), dorsal; Figs 10-11. *Sminthurinus bimaculatus* (Axelson, 1902): 10 – lateral; 11 – dorsal; Figs 12-13. *Sminthurinus elegans* (Fitch, 1863) var. *dorsalis* Axelson, 1905: 12 – lateral; 13 – dorsal; Figs 14-15. *Dicyrtomina violacea* (Stach, 1919): 14 – dorsal; 15 – lateral.

Dicyrtomidae

***Dicyrtomina violacea* (Stach, 1919)**

Locality: Meseş Mts, Pria (Perje), SW slope of Vf. Măgura Priei (Perjei csúcs), N47°00.240', E22°53.796', 838m, *Juncus* bog at the edge of beech forest and pasture, leaf hoover sample, 01.10.2014, leg. Bálint Zs., Dányi L., Katona G., Murányi D. (No.113).

Remark: *D. violacea* was described from Germany, then also reported from France, Poland and Romania (Bretfeld 1999).

DISCUSSION:

The results presented here must be considered as very preliminary ones since the number of springtail species in the county might be higher even with a magnitude. Also, from groups which were out of the focus of this contribution, there are many furter species present in the material collected during the project, too. Further work on these samples and extended collecting activity is needed to uncover the real diversity of the group in this region of Romania.

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REFERENCES:

Baquero E, Schulz J, Moravvej A, Jordana R, On identity and geographical distribution of *Entomobrya handschini* (Stach, 1922) (Collembola, Entomobryidae). Abhandlungen und Berichte des Naturkundemuseums Görlitz, 79, 2, 257–269, 2008.

Bretfeld G, Synopses on Palaearctic Collembola: Symphypleona. Abhandlungen und Berichte des Naturkundemuseums Görlitz, No. 71, 318 pp. 1999.

Fiera C, New records of springtails (Hexapoda: Collembola) for Romanian fauna. Entomologica romanica, 13: 19–22, 2008.

Fiera C, Konikiewicz M, Skarżyński D, *Tetracanthella doftana* sp. nov. (Collembola, Isotomidae) from Romania, with a key to Carpathian *Tetracanthella* Schött, 1891. Zootaxa, 3691, 4, 467–472, 2013.

Fiera C, Weiner WM, *Protaphorura tetragramata* (Gisin, 1963) and *Kalaphorura carpenteri* (Stach, 1920) (Collembola: Onychiuridae) – two new records for Romanian fauna. Romanian Journal of Biology - Zoology, 58, 1, 3–7, 2013.

Fjellberg A, The Collembola of Fennoscandia and Denmark, Part II: Entomobryomorpha and Symphypleona. Fauna Entomologica Scandinavica, 42, 1–264, 2007.

Gruia M, Collembole noi pentru fauna României. [New species of Collembola of Romania.] – Studii i cercetări de biologie, Seria Zoologie, 18, 3, 247–253, 1966.

Gruia M, Collembola of the karstic system of Romania. Mémoires de Biospéologie 27, 53–60, 2000.

Nitzu E, Olenici N, Popa I, Nae A, Biri IA, Soil and saproxylic species (Coleoptera, Collembola, Araneae) in primeval forests from the northern part of South-Easthern Carpathians. Ann. For. Res., 52, 27–54, 2009.

Popa I, First record of *Orchesella pannonica* Stach, 1960 (Hexapoda: Collembola) in Romania. Travaux de l'Institut de Speologie "Emile Racovitza", 49, 185–187, 2010a.

Popa I, First records and rare species of Collembola in the Roumanian Fauna – The Piatra Craiului Massif (The Carpathians). Trav. Inst. Spéol. «Émile Racovitza», 49, 87–96, 2010b.

Popa I, Two new records of springtails (Hexapoda: Collembola) for the Romanian fauna - Maramures county. Travaux de l'Institut de Speologie "Emile Racovitza", 51, 73–79, 2012.

Popa I, First record of *Coloburella linnaniemii* (Denis, 1926) in Romania. Travaux de l'Institut de Speologie "Emile Racovitza", 52, 33–35, 2013.

Radwański JM, Fiera C, Weiner M,·A new species of *Protaphorura* Absolon, 1901 (Collembola: Onychiuridae: Onychiurinae) from Romania and a redescription of *Protaphorura glebata* (Gisin, 1952). Annales Zoologici, 56, 3, 449–455, 2006.

Weiner WM, Fiera C, New Species of *Deuteraphorura* (Collembola: Onychiuridae) from Romania. Florida Entomologist, 97, 1, 247–255, 2014.