

# DATA CONCERNING THE ONISCIDEA AND THE DIPLOPODA FROM THE VÂRGHÎȘULUI GORGE COMPLEX RESERVE

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*Abstract.* In an attempt to continue and expand the investigations made by Professors T. Orghidan and Margareta Dumitrescu, we record now the presence of 12 species of Oniscidea and 13 species of Diplopoda in the karstic complex of the Vârghișului Gorge.

## 1. INTRODUCTION

The Vârghișului Gorge karstic complex was investigated for the first time by our distinguished predecessors Professors T. Orghidan and Margareta Dumitrescu (1962–1963). In their monographic study of this area they thoroughly described it from a geomorphologic point of view and for each of the 39 caves visited, the climate and the fauna were presented.

However, in the faunistic inventory they drew, there were only three species of Oniscidea (*Mesoniscus graniger*, *Armadilidium versicolor quinqueseriatum* and *Cylisticus* sp.) and three species of Diplopoda (*Strongylosoma pallipes*, *Polydesmus montanus montanus*, *Trachysphaera costata*).

New investigations in this area gave us the opportunity to continue and expand the list of Oniscidea and Diplopoda collected from the Vârghișului Gorges karstic complex.

## 2. MATERIAL AND METHODS

The Oniscidea and Diplopoda material from the Vârghișului Gorge karstic complex was collected during three field-trips: the first one between the 10<sup>th</sup> and the 18<sup>th</sup> of May 2002 (together with our colleagues Dr. Eugen Nitzu, Victoria Ilie and Liviu Vănoaica). A series of 8 caves was investigated on this occasion: caves 1200/8, 1200/12, 1200/13, 1200/14, 1200/18, 1200/19, 1200/24, 1200/110. During the second (between the 15<sup>th</sup> and the 25<sup>th</sup> of July 2004) and the third (between the 13<sup>th</sup> and the 27<sup>th</sup> of September 2004) field trips the material was collected only by our colleagues Dr. Eugen Nitzu, Victoria Ilie, Nae Augustin and Popa Ionuț who kindly gave us the Oniscidea and the Diplopoda material.

The cavernicolous and edaphicolous species of Oniscidea and Diplopoda were collected directly using tweezers. The leaf-litter was sifted with a Winkler sieve and the

soil samples were dried with a Tullgren apparatus. As for the mesovoid shallow substratum, Barber traps with olfactory attractant were placed.

For a more detailed description of the area and the collecting stations, see Nitzu *et al.* in this volume.

In this context, we present the Oniscidea and the Diplopoda collected from the Vârghişului Gorge karstic complex.

To establish the geographic distribution of the Oniscidea we followed RADU (1983, 1985), SCHMALFUSS (2003), while for the Diplopoda we used Tabacaru, GIURGINCA & VĂNOAICA (2004) and Prof. Dr. HENRIK ENGHOFF (2004) Fauna Europaea: Diplopoda. Fauna Europaea version 1.1, <http://www.faunaeur.org>

In order to pinpoint the distribution in Romania of the genus *Stenophyllum*, we used the UTM code with 10/10 km squares (LEHRER, A. Z. & LEHRER, M. M., 1990).

### 3. RESULTS AND DISCUSSION

Up to the present, 12 species of Oniscidea and 13 species of Diplopoda were found by us in the Vârghişului Gorge karstic complex (see Table 1).

Table 1

The species of Oniscidea and Diplopoda collected from the karstic complex of Vârghişului Gorge

Taxa	Geographic distribution	Abiotic preferences of species	Caves	MSS	Edaphic
<b>ONISCIDEA</b> Det. A. Giurginca					
<b>I. Fam. Ligiidae</b> <b>Brandt &amp; Ratzburg, 1831</b>					
<b>1. <i>Ligidium germanicum</i></b> Verhoeff, 1901	From southeastern Germany and northern Italy to southern Poland, Moldavia and northern Greece	Edaphicolous, hygrophilous-umbraticolous		X	X
<b>2. <i>Ligidium hypnorum</i></b> (Cuvier, 1792)	Europe and Western Asia	Troglophilous, edaphicolous, hygrophilous-umbraticolous			X
<b>II. Fam. Trichoniscidae</b> <b>Sars, 1899</b>					
<b>3. <i>Hyloniscus riparius</i></b> (C.L. Koch, 1838)	Central and Eastern Europe; introduced in North America	Troglophilous, mesohygrophilous-umbraticolous		X	

4. <i>Hyloniscus siculus</i> (Mehely, 1929)	Romanian endemite	Edaphic, hygrophilous- umbraticolous			X
<b>III. Fam. Mesoniscidae Verhoeff, 1908</b>					
5. <i>Mesoniscus graniger</i> (Frivaldsky, 1869)	Carpatho-Dinaric	Troglophilous	X		
<b>IV. Cylisticidae Verhoeff, 1949</b>					
6. <i>Cylisticus transsilvanicus</i> (Verhoeff, 1908)	Romanian endemite	Edaphicolous		X	X
<b>V. Fam. Trachelipodidae Strouhal, 1953</b>					
7. <i>Protracheoniscus politus politus</i> (C.L. Koch, 1841)	Central and east Europe to the western Balkan peninsula	Edaphicolous		X	X
8. <i>Trachelipus difficilis</i> (Radu, 1950)	Romanian endemite	Edaphicolous		X	
9. <i>Trachelipus nodulosus</i> (C.L. Koch, 1838)	Central and east Europe to the western Balkan peninsula	Edaphicolous, thermophilous		X	
10. <i>Porcellium conspersum</i> (C. Koch, 1841)	Continental- Temperate Europe	Edaphicolous		X	X
<b>VI. Fam. Armadillidiidae, Brandt, 1833</b>					
11. <i>Armadillidium vulgare</i> (Latreille, 1804)	Cosmopolitan	Euryoecious			X
12. <i>Armadillidium versicolor</i> (Stein, 1859)	Eastern Europe	Troglophilous	X		X
<b>DIPLOPODA</b> Det. I. Vănoaica					
<b>I. Fam. Polyxenidae Lucas, 1840</b>					
1. <i>Polyxenus</i> cf. <i>trivittatus</i>		Edaphicolous		X	X

<b>II. Fam. Glomeridae Leach, 1815</b>					
2. <i>Glomeris</i> sp.	–	Edaphicolous			X
<b>III. Fam. Trachysphaeridae Strasser, 1965</b>					
3. <i>Trachysphaera costata</i> (Waga, 1858)	Central and Eastern Europe	Troglophilous	X		X
<b>IV. Fam. Polyzoniidae Gervais, 1844</b>					
4. <i>Polyzonium</i> sp.	–	Trogloxene	X	X	
<b>V. Fam Paradoxosomatidae Daday, 1889</b>					
5. <i>Strongylosoma stigmatosum</i> (Eichwald, 1830)	Central and Eastern Europe.	Trogloxene, maybe troglophilous	X		
<b>VI. Fam. Polydesmidae Leach, 1815</b>					
6. <i>Polydesmus montanus</i> Daday, 1889	the Carpathian chain	Troglophilous	X		
7. <i>Polydesmus schäessburgensis</i> Verhoeff, 1889	Eastern Europe	Trogloxene			X
<b>VII. Fam. Julidae Leach, 1814</b>					
8. <i>Stenophyllum tabacarui</i> Vanoaica, 2003	Romanian endemite	Trogloxene	X		
9. <i>Xestoiulus</i> sp.	–	Edaphicolous			X
10. <i>Cylindroiulus luridus</i> (C.L. Koch, 1847)	Central and Eastern Europe	Edaphicolous			X
11. <i>Allaiulus boleti</i> (C.L. Koch, 1847)	Central and Eastern Europe	Edaphicolous			X
12. <i>Megaphyllum projectus kochi</i> (Verhoeff, 1907)	Central and Eastern Europe	Edaphicolous			X
13. <i>Leptoiulus trilobatus</i> (Verhoeff, 1894)	Central and Eastern Europe	Edaphicolous			X

The Oniscidea belong to 6 families and the Diplopoda to 7 families. Among the six families of Oniscidea, the best represented is the Trachelipodidae with 4 species. The Ligiidae, the Trichoniscidae and the Armadillidiidae are represented each by 2 species while the Mesoniscidae and the Cylisticidae are the most poorly represented – by only one species each.

Among the families of Diplopoda, the best represented is the Julidae (6 species), followed by the Polydesmidae (with only 2 species). All the other 5 families are represented by only one species each.

From the 25 species of Oniscidea and Diplopoda, only about a third (7 species) were found in the caves. None of them is a true troglobite. *M. graniger*, *A. versicolor quinqueseriatum*, *T. costata*, *P. montanus* are troglophilous species, while *Polyzonium* sp., *S. tabacarui* are troglaxene and *S. stigmatosum* is a troglaxene, maybe troglophilous species.

Although previously recorded from many caves (namely in ten caves) from Vărghişului Gorge (ORGHIDAN & DUMITRESCU, 1962–1963, GRUNER & TABACARU, 1963, GIURGINCA, 2003), *M. graniger* was found by us only in the Mereşti Cave (Cave 1200/14).

On the contrary, *A. versicolor quinqueseriatum* was found in all the caves investigated, being one of the most frequent and abundant oniscid collected from the Vărghişului Gorge.

*Trachysphaera costata* was collected in only two caves (namely 1200/12 and 1200/14) just like *Strongylosoma stigmatosum* (the caves 1200/24 and 1200/12). Unlike them, *Polydesmus montanus* was found only in the warm gallery of the Mereşti Cave (Cave 1200/14).

Both *Polyzonium* sp. and *Stenophyllum tabacarui* are recorded in only one cave from the karstic complex of the Vărghişului Gorge: a small cave of 6 meters development, located at approximately 42 meters below the Urşilor Cave (Cave 1200/18).

In addition to these species, a previous study (ORGHIDAN & DUMITRESCU, 1962–1963) had found one more species of *Strongylosoma* (*S. pallipes* recorded in the Cave 1200/30) but we did not find it again.

Noteworthy is the finding of a few individuals of *Protracheoniscus politus politus* and *Ligidium germanicum* in the immediate vicinity of a patch of ice covered by a deep layer of leaves (covered MSS). Unlike it, an unidentifiable ascospermophoran individual was found right on the patch of ice. A few meters away, an individual of *Polyxenus* cf. *trivittatus* was collected.

According to Tabacaru (pers. com.), there are two species belonging to the genus *Polyxenus* in Romania: *P. lagurus* and *P. trivittatus*, the latter being the more frequent of the two species. Tabacaru ascribed the individuals from Romania to the species *trivittatus* following the comparisons made at the Zoological Museum in München with the type material of Verhoeff. As such, the taxonomical status of *Polyxenus* from Romania, remains unsolved for the moment.

#### SOME CONSIDERATIONS ABOUT THE SPREADING OF THE GENUS *STENOPHYLLUM* IN ROMANIA

As the genus *Stenophyllum* represents an important endemic element of the Diplopod fauna of our country, we intent to draw here a complete list of the localities inhabited by this genus. At present, there are four species included in this genus:

1. *Stenophyllum hermanniuelleri* (Verhoeff, 1897): described from Braşov (UTM: LL 85/95) in a restricted area from a little forest, under wet leaf-litter (VERHOEFF, 1897). Later, Ceuca (1989), quoting Verhoeff (1900), records some more localities: Cincşor-Voila (UTM: LL37), Sighişoara (UTM: LL22/32), Lunca Bradului (UTM: LN50), Bistria (UTM: LL12) and between Sanţ and Rodna (UTM: LN45 – LN35).
2. *Stenophyllum primitivum* (Verhoeff, 1897): is recorded along with *St. hermanniuelleri* at Braşov (UTM: LL 85/95).
3. *Stenophyllum semenicensis* Ceuca, 1989: recorded only from Semenice Mountain (UTM: ER80). Although we have ascribed the location of this species to this UTM, its real location can not be pinpointed with precision as the only indication given by Ceuca is: “Provenienţa: au fost colectaţi 3 ♂ + 3 ♀ de pe Muntele Semenice...dintr-o pădure de amestec (foioase şi conifere)” [Provenience: 3 ♂ + 3 ♀ were collected from the Semenice Mountain...in a mixed forest (deciduous and coniferous trees)].
4. *Stenophyllum tabacarui* Vănoaica, 2003: known from only one cave from the Vărghişului Gorge (UTM: LM82): a small cave of 6 meters development, located at approximately 42 meters below the Urşilor Cave (Cave 1200/18).

As these data show (see Fig. 1), with the exception of *S. semenicensis*, all the other species of the genus *Stenophyllum* are recorded mainly from the south-eastern corner of Transylvania, with *S. hermanniuelleri* and *S. tabacarui* extending more toward the north.

#### 4. CONCLUSIONS

The data presented here, along with those recorded by Nitzu *et al.* (this volume) point out clearly that regions previously investigated may extend our knowledge with new and valuable information especially if the investigations include not only caves but also the edaphic and the MSS environments.

*Stenophyllum* appears to be a mainly Transylvanian genus, although the presence of *S. semenicensis* might suggest either a wider spreading or, as it seems to us, there might be one more species, not yet found, spread between *S. hermanniuelleri* and *S. semenicensis*, thus forming a complete “chain” of *Stenophyllum* species along the Romanian Carpathians.



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