Arch. Biol. Sci., Belgrade, 59 (3), 233-238, 2007. DOI:10.2298/ABS0703233G

ON SOME ONISCIDEA AND DIPLOPODA FROM THE RETEZAT MASSIF. FIRST RECORD OF *PORCELLIUM PRODUCTUM* FRANKENBERGER, 1940 AND *PORCELLIUM RECURVATUM* VERHOEFF, 1901 IN ROMANIA

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Abstract - Our paper presents a survay of Oniscidea and the Diplopoda from the Retezat Massif in Romania. The first records in Romania of the species *Porcellium productum* and *Porcellium recurvatum* have been presented.

Key words: Oniscidea, Diplopoda, Mt. Retezat, Romania

UDC 595.373 : 595.61 (234.421 Retezat)

INTRODUCTION

The Oniscidea and Diplopoda from the Retezat Massif are relatively well studied, the Diplopoda being better known than the Oniscidea.

Up to now, only two species of Oniscidea were recorded from the Retezat Massif (namely *Hyloniscus flammuloides* and *Hyloniscus siculus*) (R a d u, 1983). As for the Diplopoda, C e u c a (1984) listed 18 species.

New investigations, made by one of the authors (R. P.), allowed us to add four more species of Oniscidea (two of them being new species for the Romanian fauna) and two more species of Diplopoda.

MATERIAL AND METHODS

Two field trips gave us the opportunity to collect fauna from the Retezat Massif. In both field trips, we col-

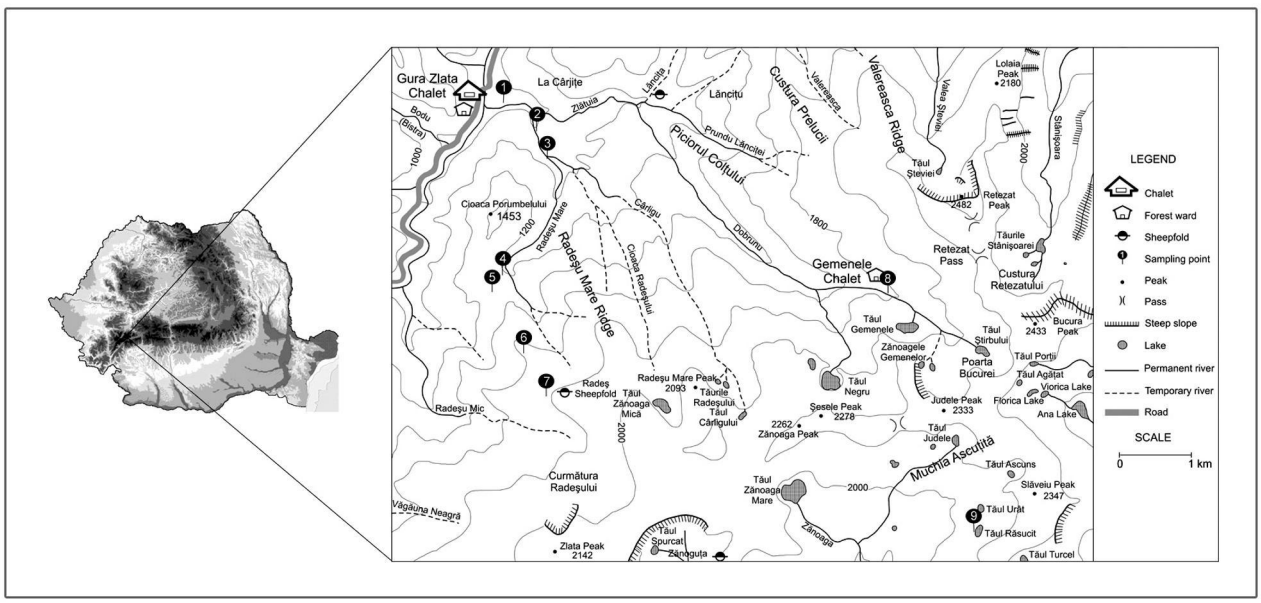

Fig. 1 - GPS positioning of the sampling sites within the Retezat Massif.

Table 1. Sampling points.

Station	Altitude (m)	Habitat
1	805	beech forest
2	850	beech forest
3	901	mixed forest beech-coniferous, predominantly beech
4	1239	mixed forest beech-coniferous (limit between the beech and the coniferous forest)
5	1340	coniferous forest
6	1664	coniferous forest
7	1790	limit between the coniferous and the juniper forest

lected fauna only from the crystalline area of the massif, positioning sampling points with a Garmin 12 XL GPS device (Fig. 1).

In the first field trip, between the 11th-12th of June 2006, the fauna was collected by hand, using a tweezer, and by 9 pitfall traps placed nearby the Gemenele Chalet (1780 m altitude).

During the second field trip, between the 10th-15th of September 2006, 21 pitfall traps (in groups of three) were placed along the altitudinal gradient, between Gura Zlata (805 m altitude) and Radeş Sheepfold (1790 m altitude), taking into account the type of vegetation. The stations of the pitfall traps, along with their altitude and type of vegetation, are presented in Table 1. Additionally, in the same period, 9 pitfall traps was placed at Tăul Răsucit.

Also, we have used the material collected between the 8th of August and the 4th of October 1971 and between the 2nd and the 8th of November 1972 by Dr. Eleonora Erhan. This material was not identified up to now and is housed in the collection of the Institute of Speleology "Emil Racoviță".

The drawings of *P. recurvatum* and *P. productum* were made with an Olympus CH2 camera lucida.

RESULTS AND DISCUSSION

Up to the present, 6 species of Oniscidea (included in 3 families) and 23 species of Diplopoda (included in 8 families) are recorded from the Retezat Massif. The species of Oniscidea are the following:

Suborder **Oniscidea** Latreille, 1802

Infraorder **Ligiamorpha** Vandel, 1943

Family **Ligiidae** Brandt & Ratzeburg, 1831

1. *Ligidium germanicum* Verhoeff, 1901. Distribution: From southeastern Germany and northern Italy to southern Poland, Moldavia and northern Greece (S c h m a l f u s s, 2003). All over Romania (R a d u, 1983).

2. *Ligidium hypnorum* (Cuvier, 1792). Distribution: Europe and Western Asia, introduced in North America (R a d u, 1983; S c h m a l f u s s, 2003). In Romania, in the entire country except Dobrogea (R a d u, 1983).

Family **Trichoniscidae** Sars, 1899

Subfamily **Trichoniscinae** Verhoeff, 1908

3. *Hyloniscus flammuloides* Tabacaru, 1972. Distribution: Romanian endemite. Found in the Southern Carpathians, Haţeg, Sebeş, Căpăţânii and Cozia Mountains. In the Retezat Massif, known only from Gura Cetăţii Cave from the northern slope of the massif (T a b a c a r u, 1972).

4. *Hyloniscus siculus* Mehely, 1929. Distribution: Romanian endemite. Found in the Eastern Carpathians, but also in the Bucegi and Apuseni Mountains. Recorded from the Retezat Massif by R a d u (1983).

Superfamily **Oniscoidea** Latreille, 1802

Family **Trachelipidae** Strouhal, 1953

5. *Porcellium productum* Frankenberger, 1940. Distribution: Up to now, recorded only from Macedonia (F r a n k e n b e r g e r, 1940; S c h m a l f u s s, 2003). This is the first record of the species from Romania: here, it was found only in the Retezat Massif.

6. *Porcellium recurvatum* Verhoeff, 1901. Distribution: Austria, western Hungary, former Yugoslavia (F r a n k e n b e r g e r, 1940), western Bulgaria, northern Greece (S c h m a l f u s s, 2003). In Romania, found only in the

Retezat Massif; this is the first record of the species in Romania.

There are 23 species of Diplopoda known from the Retezat Massif:

Order **Glomerida** Leach, 1815

Family **Glomeridae** Leach, 1815

1. *Glomeris hexasticha* Brandt, 1833. Distribution: Central, East and Southeast Europe (M a k a r o v et al., 2004). In Romania, it was found in Transylvania and Banat (C e u c a, 1989); recorded in the Retezat Massif by C e u c a (1984); also, found by us.

2. *Glomeris connexa* C. L. Koch, 1847. Distribution: Central, East Europe (C e u c a, 1989). Identified in all our mountains; recorded in Retezat by C e u c a (1989); also, recorded by us.

Family **Trachysphaeridae** Strasser, 1965

3. *Trachysphaera costata* (Waga, 1858). Central, West, East and part of Southeastern Europe (M a k a r o v et al., 2004). In Romania, frequent in caves all over the country; in the Retezat Massif, known from two caves: Gura Cetății and Dodoconi (T a b a c a r u et al., 2003).

Order **Polyzoniida** Gervais, 1844

Family **Polyzoniidae** Gervais, 1844

4. *Polyzonium transsilvanicum* (Verhoeff, 1858). Distribution: Romania, Slovakia, Ukraine; recorded in Retezat by C e u c a (1984). Also, found by us.

Order **Polydesmida** Leach, 1815

Family **Polydesmidae** Leach, 1815

5. *Polydesmus (Polydesmus) montanus* Daday, 1889. Distribution: Along the Carpathian Chain (T a b a c a r u et al., 2003). In Romania, often found in caves from Apuseni Mountains and Eastern Carpathians (T a b a c a r u et al., 2003). This is the first record of the species from the Retezat Massif.

6. *Polydesmus (Polydesmus) csikii* Loksa, 1954. Distribution: Romanian endemite; recorded in the Retezat Massif by C e u c a (1984).

7. *Polydesmus (Nomarchus) subscabratus bifidus* Attems, 1926. Distribution: Romanian endemite, recorded only from Retezat Massif (T a b a c a r u and N e g r e a, 1961).

Family **Paradoxosomatidae** Daday, 1889

8. *Strongylosoma stigmatosum* (Eichwald, 1830). Distribution: Central, East Europe (C e u c a, 1984); recorded in the Retezat Massif by C e u c a (1984).

Order **Craspedosomatida** Gray, 1843

Family **Mastigophorophyllidae** Verhoeff, 1899

9. *Mastigophorophyllon carpaticus* Ceuca, 1976. Distribution: Romanian endemite, found only in the Retezat Massif (Pietrele Chalet) (C e u c a, 1976).

10. *Mastigophorophyllon banarescui* Ceuca, 1976. Distribution: Romanian endemite, found only in the Retezat Massif (Buta Peak) (C e u c a, 1976).

Family **Entomobielziidae** Verhoeff, 1899

11. *Entomobielzia getica* Ceuca, 1964. Distribution: Romanian endemite; recorded in the Retezat Massif by C e u c a (1984).

Order **Julida** Leach, 1814

Family **Julidae** Leach, 1814

12. *Enantiulus transsilvanicum* (Verhoeff, 1899). Distribution: Central European; recorded in the Retezat Massif by C e u c a (1984).

13. *Allajulus luridus* (C.L. Koch, 1974). Distribution: Central Europe and former Yugoslavia (T a b a c a r u et al., 2003); recorded in the Retezat Massif by C e u c a (1984).

14. *Haplophyllum mehelyi* (Verhoeff, 1899). Distribution: Romania, Ukraine; recorded in the Retezat Massif by C e u c a (1984).

15. *Leptoiulus trilobatus* (Verhoeff, 1894). Distribution: Germany, Czech Republic and Slovakia, Hungary, Romania, Sweden (S t o j a l o w s k a, 1961); recorded in the Retezat Massif by C e u c a (1984); also identified by us.

16. *Leptoiulus transsylvanicus* Daday, 1887. Distribu-

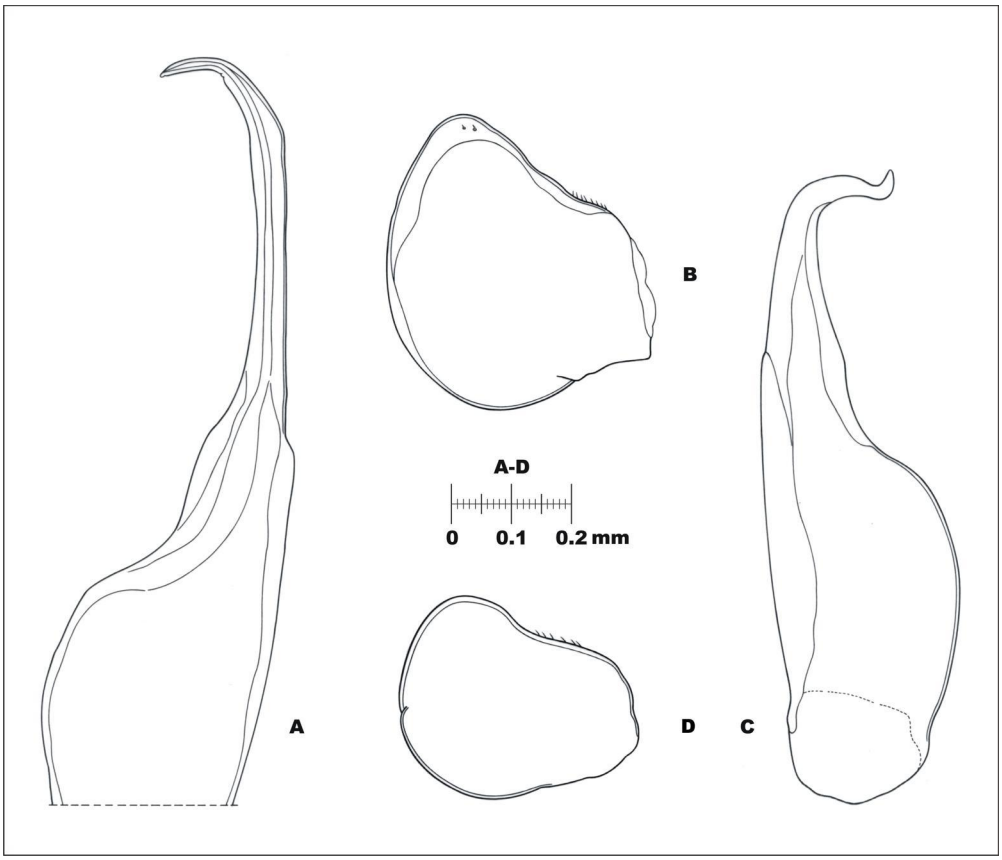

Fig. 2 - First male pleopod endopodite (A) and exopodite (B) in *Porcellium. productum* and first male pleopod endopodite (C) and exopodite (D) in *P. recurvatum*.

tion: Romanian endemite; recorded in the Retezat Massif by C e u c a (1984).

17. *Allopodoiulus verhoeffi* (Jawlowski, 1931). Distribution: Romania, Poland and Ukraine (S t o j a l o w s k a, 1961); recorded in the Retezat Massif by C e u c a (1984); also, found by us.

18. *Cylindroiulus britannicus* (Verhoeff, 1891). Distribution: Mainly Central Europe, but also Scandinavian Peninsula and parts of Western Europe (S t o j a l o w s k a, 1961). This is the first record of the species from the Retezat Massif.

19. *Unciger transsilvanicus* (Verhoeff, 1899). Distribution: Central, East Europe; recorded in the Retezat Massif by C e u c a (1984).

20. *Typhloiulus (Typhloiulus) strictus* (Latzel, 1882). Distribution: Bulgaria, Serbia and Romania: in Romania, spread in the Southern Carpathians; in the Retezat Massif, known only from Gura Cetății Cave (T a b a c a r u et al., 2003).

21. *Megaphyllum platyurus* (Latzel, 1884). Distribution: Serbia and Romania (T a b a c a r u et al., 2003). Up to the present, known only from the Mehedinți and Banatului Mountains; recorded in the Retezat Massif by C e u c a (1984); also, found by us.

22. *Megaphyllum projectus dioritanus* (Verhoeff, 1907). Distribution: Central European; recorded in the Retezat Massif by C e u c a (1984).

23. *Ommatoiulus sabulosus* (Linnaeus, 1758). Distribution: European; recorded in the Retezat Massif by C e u c a (1984).

SOME CONSIDERATIONS ABOUT *PORCELLIUM PRODUCTUM* AND *P. RECURVATUM*

As yet, only two species of the genus *Porcellium* were recorded from Romania: *Porcellium conspersum* (C. Koch, 1841) and *Porcellium collicola* (Verhoeff, 1907).

A third species, *Porcellium horvathi* (Dollfus, 1901) was described from Retezat and so, possibly, might be one of the species found by the present authors. But as *Porcellium horvathi* is a *nomen dubium* (S c h m a l f u s s, 2003), we consider our finding as the first record of both *P. productum* and *P. recurvatum*.

Porcellium productum was found only once (one male) at the upper limit between the beech and the coniferous forests at an altitude of 1340 m, at mid-distance between the Gura Zlata Chalet and the Radeş Sheepfold (GPS positioning: 45.36917^0 lat. N and 22.77181^0 long. E). The species is easily recognizable by the characteristic endopodite with a widened base and the strongly curved, hook-like distal part and the roughly triangular exopodite with rounded corners (Figs. 2A and 2B).

Porcellium recurvatum is even easier to recognize by its very characteristic endopodite with the distal part curved in a semicircle and then bent dorsally like a hook and by the small, rounded exopodite (Figs. 2C and 2D).

Porcellium recurvatum was also found only once (one male) at an altitude of 805 m in a beech forest relatively close to the Gura Zlata Chalet (45.39125^0 lat. N and 22.77278^0 long. E). As *Porcellium recurvatum* was found at altitudes between 700 m (Pangeon Mountain - Greece) and 2900 m (Olympus Massif - Greece) (S c h m a l f u s s, 1993), our find represents only an intermediate altitude for this species. Further investigations will show if *Porcellium recurvatum* - a species known to inhabit forests of *Fagus* and *Quercus* (in Greece) and also mixed forests of *Fagus*, *Pinus* and *Abies* - inhabits the same wide range of types of vegetation in the Retezat Massif.

Acknowledgements - The authors are greatly indebted to Dr. Delia Ceuca and Dr. Ivo Karaman for the help given in obtaining our documentation. We also wish to thank to our colleagues Marius Vlaicu and Virgil Drăguşin for helping us to process cartographic data. The authors warmly thank Mrs. Marinela Năzăreanu and Mrs. Paula Achim for excellent drawings in China ink. Our study of the Retezat Massif was partially supported by NURC (CNCSIS) Grant 1114/2004.

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О НЕКИМ ONISCIDEA И DIPLOPODA ИЗ МАСИВА РЕТЕЗАТ. ПРВИ НАЛАЗ *PORCELLIUM PRODUCTUM* FRANKENBERGER И *P. RECURVATUM* VERHOEFF У РУМУНИЈИ

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У овом раду изложен је преглед таксона онисцидеа и диплопода из масива Ретезат у Румунији. Поред тога, регистровани су и први налази врста *Porcellium productum* и *Porcellium recurvatum* у Румунији.