

THE TERRESTRIAL ISOPODS (CRUSTACEA, ISOPODA: ONISCIDEA) OF MARAMUREȘ (ROMANIA)

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ABSTRACT. Manual samplings in Maramureș county in Romania yielded 13 terrestrial isopod species altogether: *Ligidium hypnorum*, *Ligidium intermedium*, *Hyloniscus transsilvanicus*, *Trichoniscus* sp., *Protracheoniscus politus*, *Porcellio scaber*, *Cylisticus convexus*, *Porcellium* sp., *P. conspersum*, *Trachelipus difficilis*, *T. rathkii*, *Armadillidium versicolor*, *Armadillidium vulgare*. The most frequent species was the Carpathian endemic *T. difficilis* that occurred in most observed habitats. Carpathian species *L. intermedium* and *H. transsilvanicus* and Central-European *P. politus* were also common, while European, Holarctic and Cosmopolitan species were represented with low frequencies in the area.

Keywords: woodlice, soil fauna, Maramureș, Romania

INTRODUCTION

As important members of soil and litter dwelling decomposer guild, terrestrial isopods are Crustaceans adapted to terrestrial conditions, showing a world-wide distribution in natural, disturbed and even in urban environments. Investigations prove that woodlice play an important role in decomposition of dead plant material (Hassall *et al.*, 1987). Still, our knowledge of Central and Eastern European distribution of isopods is far from comprehensive. Thus, our faunistic research can provide essential data contributing to the knowledge of the Isopoda fauna of Transylvania and Romania.

MATERIALS AND METHODS

Manual samplings were performed in 43 localities in different natural and disturbed habitats in Maramureș County, Romania between 2005 and 2008. The keys and figures of Gruner (1966), Schmölder (1965) and Kontschán (2002) were used for identification, valid nomenclature followed Schmalzfuss (2003).

LIST OF LOCALITIES

Localities and biotic data of isopod sampling records in Maramureș. Numbers in parentheses refer to the locality numbers published in Murányi (2008).

1. (32): Depresiunea Maramureșului, Rona de Sus, Héra, Zalom valley, alder gallery forest, 28.06.2005, N47°51'54.3" E24°05'27.8", 504m.

2. (34): Munții Rodnei, Borșa - Stațiunea Borșa, open stream and sidebrooks, wet grassland and beech forest under the ski course, 28.06.2005, 878-1022m.

3. (45): Munții Pietrii, Săpânța, mineral water springs and outflows, beech forest in the lower valley of the Săpânța Stream, 30.06.2005, N47°56'05.5" E23°40'41.2", 408m.

4. (54): Depresiunea Maramureșului, Sighetu Marmației, Mocsár area, orchard, 19.22–25.09.2005, N47°55'07.1" E23°56'43.5", 369m.

5. (56): Munții Pietrii, Sighetu Marmației - Șugău valley of the Bârlan Stream above the Gyertyános forester house, beech forest, stream, 20.09.2005, ~550m.

6. (57): Munții Pietrii, Sighetu Marmației - Șugău, upper section of the Șugău Stream, beech forest above the Gyertyános area, 20.09.2005, ~600m.

7. (60): Munții Pietrii, Sighetu Marmației - Șugău, Agriș, Asupra Sorompului area, stream, pine forest, 21.09.2005, ~850m.

8. (61): Munții Pietrii, Sighetu Marmației, meadow, springs under the Mt. Țiganului, 21.09.2005, ~1200m.

9. (63): Munții Rodnei, Săcel, Iza Spring, pine forest, 22.09.2005, N47°35.587' E24°32.121', 1037m.

10. (64): Munții Rodnei, Săcel, Muched Lake, peatbog, pine scrub, pine forest, 22.09.2005, N47°34' E24°32', ~1450m.

11. (65): Munții Rodnei, Săcel, Iza Gorge, Iza River and the shore vegetation, limestone rocks, 22.09.2005, ~800m.

12. (72): Munții Igriș, Desești - Stațiunea Izvoare, stream in a meadow on the Valhani Plateau, beech forest, wet grassland, willow bush, 24.09.2005, N47°43'01.0" E23°44'32.1", 1020m.

13 (76): Depresiunea Maramureșului, Sighetu Marmației, Mocsár area, orchard, 22–6.05.2006 N47°55'07.1" E23°56'43.5", 369m.

14 (77): Munții Lăpușului, Văleni, Secătura, pasture, beech forest and forest brooks at Canton Silvic, 23.05.2006, N47°43'46.4" E24°01'52.5", 754m.

15 (78): Munții Lăpușului, Văleni, outflow brook of Kígyós Lake, beech forest 23.05.2006, N47°42'54.4" E24°01'38.0", 966m.

16 (79): Munții Lăpușului, Văleni, peatbog, its inflow and outflow brooks in a beech forest, pasture, pine forest edge, 23.05.2006, N47°42'43.2" E24°01'48.7", 987m.

17. (80): Munții Lăpușului, Bârsana, Mori Stream in alder gallery, streamshore meadow with cotton grass, 23.05.2006, N47°45'19.0" E24°03'00.9", 465m.

18. (81): Munții Lăpușului, Văleni, Mori Stream, mineral water springs, beech forest, 24.05.2006, N47°43'59.8" E24°02'34.7", 620m.

19. (82): Munții Lăpușului, Bârsana, Mori Stream, hazel scrub and streamshore wet meadow, 24.05.2006, N47°46'49.1" E24°03'11.1", 384m.

20. (83): Munții Țibleș Dragomireșt, Baicu Stream in alder gallery, beech forest, 24.05.2006, N47°34'43.5" E24°14'11.8", 718m.

21. (85): Munții Țibleș, Dragomirești, valley of the Baicu Stream, forest, 24.05.2006, N47°34'13.5" E24°15'42.2", 722m.

22. (87): Munții Maramureș, Petrova, Tomnatic Stream gorge, pine-beech forest, 25.05.2006, N47°52'46.6" E24°19'57.8", 802m.

23. (91): Munții Gutâi, Mara, left sidestream of the Mara River, beech forest, 26.05.2006, N47°43'45.7" E23°47'50.0", 622m.

24. (92): Munții Gutâi, Baia Sprie, brook, beech forest along the road 18, 26.05.2006, N47°41'36.4" E23°46'31.9", 909m.

25. (103): Munții Pietrii, Săpânța, Mireș, beech forest, 15.06.2006, 800m.

26. (118): Munții Rodnei, Săcel, Lacul Muced, peatbog, 20.09.2006, 1400m.

27. (119): Munții Rodnei, Săcel, Pietri Pass, spruce forest, 20.09.2006, 1200m.

28. (120): Munții Maramureș, Borșa - Băile Borșa, Vinișor valley middle section, spring, beech forest, 22.05.2007, N47°40.160' E24°47.253', 988m.

29. (146): Munții Rodnei, Borșa - Stațiunea Borșa, Cimpioies valley, beech forest, wet grassland and brooks 23.05.2007, N47°36'11.2" E24°46'30.0", 1023m.

30. (150): Munții Rodnei, Săcel, Iza Spring, pine forest, 23.05.2007, N47°35.587' E24°32.121', 1037m.

31. (151): Munții Rodnei, Săcel, Iza Gorge, Iza River, shore vegetation, limestone rocks, 23.05.2007, N47°36.058' E24°31.812', 946m.

32. (152): Munții Maramureș, Poienile de sub Munte, Budescu valley, brook in mixed forest, 24.05.2007, N47°52.254' E24°36.192', 821m.

33. (153): Munții Maramureș, Poienile de sub Munte Rica valley, artificial ponds, 24.05.2007, N47°52.474' E24°34.871', 763m.

34. (154): Munții Maramureș, Poienile de sub Munte, Lutoasa valley, brook in mixed forest, 24.05.2007, N47°51.241' E24°33.544', 868m.

35. (170): Munții Rodnei, Săcel, Iza Gorge, Iza River and the shore vegetation, mixed forest and limestone rocks, 20.05.2008, N47°36.058' E24°31.812', 946m.

36. (173): Munții Rodnei, Săcel, pine forest and brook above the Iza Spring, 20.05.2008, N47°34.830' E24°32.108', 1153m.

37. (175): Munții Maramureș, Vișeu de Sus, Șuligu de Sus Stream and pine forest at the mineral water

spring, 21.05.2008, N47°48.310' E24°41.143', 862m.

38 (177): Munții Maramureș, Vișeu de Sus, sidetorrent of the Vaser River beneath Făina, 21.05.2008, N47°47.720' E24°41.394', 773m.

39. (178): Munții Maramureș, Vișeu de Sus, Vaser River and the vicinity of the forester house at Făina, 21–22.05.2008, N47°47.422' E24°41.784', 668m.

40. (179): Munții Maramureș, Vișeu de Sus, Mihoia Stream and pine forest at the mineral water spring, 22.05.2008, N47°46.884' E24°42.018', 719m.

41. (182): Munții Maramureș, Vișeu de Sus, Vaser River and its gallery beneath Șuligu, 22.05.2008, N47°48.205' E24°40.242', ~650m.

42. (186): Munții Oașului (Avas), Piatra, beech forest and brook beneath the Huta Pass, 23.05.2008, N47°58.151' E23°31.184', 430m.

43. (192): Depresiunea Maramureșului, Ocna Șugatag, Crăiasca, oak forest, 05.06.2008, 520m.

RESULTS

Field samplings yielded a total of 260 woodlice specimens which belonged to 13 species. The most frequent isopods were *Trachelipus difficilis* (Radu, 1950), *Ligidium intermedium* Radu, 1950, *Hyloniscus transsilvanicus* (Verhoeff, 1901) and *Protracheoniscus politus* (C. Koch, 1841).

The captured isopods can be grouped according to their distribution. Two species are restricted to Transylvania and northeast Hungary (*L. intermedium*, *H. transsilvanicus*) (Radu, 1950; Kotschán et al., 2006). The large bodied isopod *T. difficilis* (previously known as *Trachelipus waechleri* Strouhal, 1951) is common in Romania and occurs in southern Poland, Slovakia and northeastern Hungary (e.g. *Giurginca & Curcic*, 2003; *Giurginca et al.*, 2006; *Dominiak*, 1970; *Sywula & Jedryczkowski*, 2000; *Vilisics et al.*, 2008).

We found species of Central-Eastern Europe (*P. politus*, *Armadillidium versicolor* Stein, 1859), while two species [*Ligidium hypnorum* (Cuvier, 1792), *Porcellium conspersum* (C. Koch, 1841)] has a broad European distribution. Common, Holarctic species are represented by *Trachelipus rathkii* (Brandt, 1833) and *Cylisticus convexus* (De Geer, 1778). Both isopods were introduced in north America (*Schmalzfuss*, 2003). Two cosmopolitan species [*Armadillidium vulgare* (Latreille, 1804), *Porcellio scaber* (Latreille, 1804)] were also found during the samplings.

Ligiidae

Ligidium intermedium Radu, 1950

Localities: 9: 2 spp, 11: 2 spp, 14: 1 sp, 15: 2 spp, 16: 2 spp, 18: 13 spp, 21: 5 spp, 24: 3 spp, 25: 2 spp, 29: 1 sp, 30: 1 sp, 32: 1 spp, 35: 3 spp

Ligidium hypnorum (Cuvier, 1792)

Localities: 1: 1 sp, 20: 1 sp

Trichoniscidae

Hyloniscus transsilvanicus (Verhoeff, 1901)

Localities: 3: 1 sp, 4: 1 sp, 7: 1 sp, 8: 1 sp, 9: 1 sp, 12: 2 spp, 14: 1 sp, 15: 4 spp, 17: 1 sp, 18: 1 sp, 19: 1 sp, 27: 2 spp, 40: 5 spp

Trichoniscus sp.

Localities: 18: 4 spp, 41: 1 sp

Agnaridae

Protracheoniscus politus (C. Koch, 1841)

Localities: 1: 1 sp, 8: 1 sp, 12: 1 sp, 14: 9 spp, 15: 3 spp, 16: 4 spp, 19: 2 spp, 21: 1 sp, 23: 4 spp, 26: 1 sp, 29: 1 sp

Porcellionidae

Porcellio scaber Latreille, 1804

Localities: 10: 1 sp, 14: 29 spp, 39: 1 sp

Cylisticidae

Cylisticus convexus (De Geer, 1778)

Localities: 2: 2 spp, 39: 3 spp

Trachelipodidae

Porcellium sp.

Locality: 43: 1 sp

Porcellium conspersum (C. Koch, 1841)

Localities: 7: 1 sp, 16: 1 sp, 29: 3 spp, 33: 1 sp, 34: 1 sp

Trachelipus difficilis (Radu, 1950)

Localities: 3: 3 spp, 6: 3 spp, 7: 24 spp, 8: 13 spp, 11: 7 spp, 12: 3 spp, 13: 2 spp, 14: 2 spp, 16: 10 spp, 17: 2 spp, 21: 3 spp, 22: 3 spp, 25: 8 spp, 26: 1 sp, 28: 1 sp, 29: 1 sp, 31: 1 sp, 32: 1 sp, 35: 8 spp, 36: 1 sp, 37: 4 spp, 38: 1 sp, 41: 6 spp

Trachelipus rathkii (Brandt, 1833)

Localities: 4: 7 spp, 5: 1 sp, 13: 3 spp, 26: 1 sp

Armadillidiidae

Armadillidium versicolor Stein, 1859

Locality: 42: 1 sp

Armadillidium vulgare (Latreille, 1804)

Locality: 77: 1 sp.

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