

New earthworm (Megadrili: Lumbricidae) records from Bulgaria with the first finding of *Dendrobaena platyura* (Fitzinger, 1833) in the country

HRISTO VALCHOVSKI¹, KALINA KOCEVA², NIKOLAY KODJABASHEV², TIMEA SZEDERJESI³

¹Department of Soil Microbiology, Institute of Soil Science, Agrotechnologies and Plant Protection “N. Poushkarov”, 1080 Sofia, 7 Shosse Bankya Str., Bulgaria, h_valchovski@abv.bg

²University of Forestry, 1797 Sofia, 10 Kliment Ohridsky Blvd., Bulgaria

³Department of Zoology, Hungarian Natural History Museum, 1088 Budapest, 13 Baross Str., Hungary

Abstract. Results of recent earthworm collectings in Bulgaria are presented. During the investigations altogether 18 species have been registered. *Dendrobaena platyura* (Fitzinger, 1833) is a new record for the country, and with *D. hrabei* (Černosvitov, 1934) and *Octodrilus transpadanus* (Rosa, 1884) also for the region of Stara Planina (Balkan) Mts. *D. hrabei*, *D. depressa* (Rosa, 1893), *D. octaedra* (Savigny, 1826) and *Eiseniella tetraedra* (Savigny, 1826) represent new records for Pirin Mts.

Key words: earthworms, new records, Bulgaria

Introduction

The first data of earthworms in Bulgaria were published by Rosa (1897). His work was followed by Černosvitov (1934, 1937) and the researches were more or less continuous in the last century (Mihailova 1966, Zicsi & Csuzdi 1986). Recently, Stojanović *et al.* (2012), Szederjesi (2013), Valchovski (2012), published new records on the earthworm fauna.

The aim of this present study is to summarize the results of the earthworm collecting trips carried out to different parts of Bulgaria between 2005 and 2017.

Material and Methods

The field investigations were carried out in 2005, 2013, 2016 and 2017. Various regions were studied: Stara Planina Mts., Pirin Mts., Rila Mts., Osogovska Mts., Konyavska Mts. and Belasitsa Mts. They were collected by the diluted formaldehyde method (Raw 1959) complemented with digging and hand-sorting, and killed and fixed in 96% or 75% ethanol. The other specimens were deposited in the Institute of Soil Science, Agrotechnologies and Plant Protection “N. Poushkarov”, Sofia, Bulgaria. They were collected with formaldehyde traps and fixed in 4% formalin solution and in 70% ethanol.

Results

1. Barzia, meadow, 865 m, N43°11'18" E23°07'32", 16.04.2016, leg. N. Kodjabashev, 6 ex. *Dendrobaena platyura* (Fitzinger, 1833).

2. Stara Planina Mts., Gorna Korja reserve, spruce forest, 1680 m, N43°10'57" E23°04'29", 17.04.2016, leg. N. Kodjabashev, 1 ex. *Dendrobaena alpina alpina* (Rosa, 1884), 1 ex. *Dendrobaena octaedra* (Savigny, 1826).

3. Stara Planina Mts., meadow clearing, 1412 m, N43°08'32" E23°07'24", 15.04.2016, leg. N. Kodjabashev, 2 ex. *Bimastos eiseni* (Levinsen, 1884), 2 ex. *Bimastos*

rubidus (Savigny, 1826), 2 ex. *Dendrobaena platyura* (Fitzinger, 1833), 2 ex. *Eisenia lucens* (Waga, 1857), 4 ex. *Lumbricus rubellus* Hoffmeister, 1843.

4. Stara Planina Mts., Gorna Korja reserve, beech forest, 1500 m, N43°11'05" E23°04'20", 17.04.2016, leg. N. Kodjabashev, *Bimastos eiseni* (Levinsen, 1884), 2 ex. *Bimastos rubidus* (Savigny, 1826), 3 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 2 ex. *Dendrobaena platyura* (Fitzinger, 1833), 1 ex. *Eisenia lucens* (Waga, 1857).

5. Belasitsa Mts., Petrich, beech forest SW of the city, 1165 m, N41°21'47" E23°10'28", 27.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Dendrobaena alpina alpina* (Rosa, 1884), 5 ex. *Eisenia lucens* (Waga, 1857).

6. Belasitsa Mts., Petrich, spring of Lesniska Stream SW of the city, 1025 m, N41°21'21" E23°10'76", 27.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 6 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 1 ex. *Lumbricus rubellus* Hoffmeister, 1843.

7. Pirin Mts., Bansko, brook in pine shrub below Vihren hut, 1965 m, N41°45'49" E23°24'96", 24.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 2 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 1 ex. *Eiseniella tetraedra* (Savigny, 1826).

8. Pirin Mts., Bansko, Demyanitsa Stream and its gorge S of the city, 1535 m, N41°47'12" E23°27'68", 24.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Dendrobaena depressa* (Rosa, 1893), 2 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 1 ex. *Eiseniella tetraedra* (Savigny, 1826).

9. Pirin Mts., Bansko, stream in alder forest S (above) of the city, 1060 m, N41°49'07" E23°28'39", 24.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 3 ex. *Dendrobaena hrabei* (Černosvitov, 1934).

10. Pirin Mts., Bansko, stream in pine shrub above Vihren hut, 1995 m, N41°45'29" E23°24'93", 24.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, *Bimastos rubidus* (Savigny, 1826).

11. Pirin Mts., Dobrinishte, Desilitsa Stream S of the village, 1305 m, N41°46'11" E23°33'05", 24.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 3 ex. *Dendrobaena hrabei* (Černosvitov, 1934).

12. Konyavska planina, beech forest and forest brook towards the TV tower, 1175 m, N42°21'83" E22°49'79", 23.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Dendrobaena depressa* (Rosa, 1893).

13. Pirin Mts., Popovi Livadi, beech forest below the settlement, 1335 m, N41°32'28" E23°36'83", 26.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Dendrobaena octaedra* (Savigny, 1826).

14. Osogovska Mts., spruce forest, forest brook below Trite buki hut, 1520 m, N42°10'46" E22°38'06", 23.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Bimastos rubidus* (Savigny, 1826), 8 ex. *Dendrobaena depressa* (Rosa, 1893), 2 ex. *Eiseniella tetraedra* (Savigny, 1826).

15. Osogovska Mts., spruce forest, forest stream below Trite buki hut, 1445 m, N42°11'00" E22°37'92", 23.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Aporrectodea caliginosa* (Savigny, 1826) 1 ex. *Bimastos rubidus* (Savigny, 1826), 2 ex. *Dendrobaena depressa* (Rosa, 1893), 2 ex. *Dendrobaena octaedra* (Savigny, 1826).

16. Upper Struma Valley, Chetirtsi, Struma River SE of the village, 435 m, N42°13'74" E22°53'30", 23.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Lumbricus terrestris* Linnaeus, 1758.

17. Upper Struma Valley, D. Grashtitsa, occupied spring in the village, 480 m, N42°17'90" E22°47'39", 23.10.2013, leg. J. Kontschán, D. Murányi, T. Szederjesi, 1 ex. *Lumbricus terrestris* Linnaeus, 1758.

18. Berkovska River, beech forest, 645 m, N43°12'7" E23°06'16", 17.04.2016, leg. N. Kodjabashev, 1 ex. *Bimastos eiseni* (Levinsen, 1884), 1 ex. *Dendrobaena octaedra* (Savigny,

1826), 5 ex. *Dendrobaena platyura* (Fitzinger, 1833), 3 ex. *Octodrilus transpadanus* (Rosa, 1884), 2 ex. 4 ex. *Lumbricus rubellus* Hoffmeister, 1843.

19. Petrohan, beech forest, 1420 m, N43°07'45" E23°07'40", 15.04.2016, leg. N. Kodjabashev, 3 ex. *Bimastos rubidus* (Savigny, 1826), 3 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 1 ex. *Dendrobaena octaedra* (Savigny, 1826), 1 ex. *Dendrobaena platyura* (Fitzinger, 1833).

20. Petrohan, beech forest, 1600 m, N43°07'56" E23°07'59", 14.04.2016, leg. N. Kodjabashev, 2 ex. *Bimastos rubidus* (Savigny, 1826), 2 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 1 ex. *Dendrobaena platyura* (Fitzinger, 1833), 2 ex. *Lumbricus rubellus* Hoffmeister, 1843.

21. Petrohan, subalpine meadow, 1520 m, N43°08'22" E23°06'43", 15.04.2016, leg. N. Kodjabashev, 1 ex. *Cernosvitovia rebeli* (Rosa, 1897), 1 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 2 ex. *Dendrobaena octaedra* (Savigny, 1826).

22. Plovdiv, Bunardzhik Hill, 29.04.1971, leg. Á. Berczik., 1 ex. *Dendrobaena platyura* (Fitzinger, 1833).

23. Rila, Maritsa basin, spring of Prava Maritsa below Zavrachitsa hut, N42°09'38'08" E23°37'02", 2518 m, 08.09.2005, leg. M. Földvári, J. Kontschán, D. Murányi, T. Szüts, 4 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 1 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 2 ex. *Dendrobaena rhodopensis* (Černosvitov, 1937).

24. Rila, Struma basin, Rilomanastirska Gora Reserve, Camping Zodiak, 1200 m, 07.09.2005, leg. M. Földvári, J. Kontschán, D. Murányi, T. Szüts, 1 ex. *Lumbricus terrestris* Linnaeus, 1758.

25. Rila, Struma basin, Tiha Rila, 1950 m, 06.09.2005, leg. M. Földvári, J. Kontschán, D. Murányi, T. Szüts, 1 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 2 ex. *Dendrobaena rhodopensis* (Černosvitov, 1937).

26. Srechenska bara dam, oak forest, 455 m, N43°12'24" E23°11'42", 17.05.2017, leg. N. Kodjabashev, 1 ex. *Bimastos rubidus* (Savigny, 1826), 1 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 5 ex. *Lumbricus terrestris* Linnaeus, 1758.

27. Stara Planina Mts., Sliven, Sinite Kamani Natural Park, Karandila, karstic spring, 05.09.2005, leg. M. Földvári, J. Kontschán, D. Murányi, T. Szüts, 14 ex. 1 ex. *Dendrobaena veneta* (Rosa, 1886).

28. Stara Planina Mts., Stidovska, stream at Gradets, 05.09.2005, leg. M. Földvári, J. Kontschán, D. Murányi, T. Szüts, 1 ex. *Cernosvitovia rebeli* (Rosa, 1897), 1 ex. *Dendrobaena hrabei* (Černosvitov, 1934), 1 ex. *Dendrobaena veneta* (Rosa, 1886), 1 ex. *Octolasion lacteum* (Örley, 1881).

29. Western parts of Stara Planina Mts. near Berkovitsa, Kaleeva cheshma, mixed forest, 700 m, N43°12'59" E23°06'25", 17. 04. 2016, leg. N. Kodjabashev, *Bimastos rubidus* (Savigny, 1826), 1 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 2 ex. 1 ex. *Dendrobaena platyura* (Fitzinger, 1833), 3 ex. *Eisenia lucens* (Waga, 1857), 3 ex. *Eiseniella tetraedra* (Savigny, 1826), 1 ex. *Octolasion lacteum* (Örley, 1881), 1 ex. *Lumbricus rubellus* Hoffmeister, 1843.

30. Western parts of Stara Planina Mts., near Barzia, Pioneer camp, beech forest, 925 m, N43°10'56" E23°07'08", 16.04.2016, leg. N. Kodjabashev, *Bimastos eiseni* (Levensen, 1884), 1 ex. *Dendrobaena attemsi* (Michaelsen, 1902), 3 ex. *Dendrobaena platyura* (Fitzinger, 1833), 1 ex. *Octolasion lacteum* (Örley, 1881), 1 ex. 4 ex. *Lumbricus rubellus* Hoffmeister, 1843.

Discussion

During the current study, totally 18 earthworm species have been collected from various parts of Bulgaria. First occurrences of *Dendrobaena platyura* in Bulgaria are presented. This species has been mentioned in the former literature without any published

data from the country. *Dendrobaena depressa*, which was recorded only once in 1965 by Mihailova has been found in new localities: Osogovska Mts., Konyavska Mts., and Pirin Mts.

The results also contribute to the earthworm biodiversity of Stara Planina (Balkan) Mts. and Pirin Mts. with *D. hrabei*, *D. platyura* and *O. transpadanus* as new records for the region of Stara Planina Mts., and *D. hrabei*, *D. depressa*, *D. octaedra*, and *E. tetraedra* as new records for Pirin Mts.

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