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New and little known earthworm species from Greece (Oligochaeta: Lumbricidae, Acanthodrilidae)

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Abstract

The results of the soil zoology collecting trips to Greece carried out by the members of the Hungarian Natural History Museum between the years 2006 and 2011 are summarized. Altogether 31 earthworm species were collected including two species new to science; *Eisenia oreophila* and *Dendrobaena retrosella* spp. nov. Further six species proved to be new for the fauna of Greece: *Dendrobaena balcanica* (Černosvitov, 1937), *D. hrabei* (Černosvitov, 1934), *D. octaedra* (Savigny, 1826), *Eiseniella neapolitana* (Örley, 1885), *Fitzingeria loebli* Zicsi, 1985 and *Helodrilus vagneri* Mršić, 1991. Furthermore, *Octodrilus peleensis* Michalis, 1995 is proposed to be a synonym of *Oc. complanatus*. The resulting list of earthworms recorded for the fauna of Greece contains 54 lumbricid species.

Key words: Earthworms, Greece, new species, new records, new synonym

Introduction

The Balkan Peninsula is one of the most important biodiversity hotspots in Europe (Griffiths, Krystufek & Reed 2004). The number of endemic species is particularly high in case of animals with limited dispersal ability and/or special habitat preferences. Beside its natural geography and complex geological history, the climate of the Balkan also played a major role in the formation of this impressive species richness. During the last Ice Age period the ice cover didn't reach this area, so the Balkan Peninsula served as a refugium and played a crucial role in the repopulation of Central and Eastern Europe (Hewitt, 1999). Earthworms, as sedentary animals, did not take part in the Quaternary fauna migrations (Csuzdi *et al*. 2011) however, as the Balkan Peninsula was free of glaciations it served as an important speciation centre of the modern earthworm fauna which resulted in a high endemicity ratio (Omodeo, 1952; Stojanović *et al*. 2008).

The zoogeographical peculiarities of the Balkan provoked attention from the beginning of the last century, and, as a result, intensive soil zoological researches of the region were launched (Cognetti 1906; Černosvitov 1930; Willmann 1941; Kratochvíl 1946). These researches were followed by local scientists specialised on different groups such as earthworms (Karaman 1971; Šapkarev 1978; Mršić 1991; Stojanović *et al*. 2008), harvestmen (Opiliones) (Hadži 1973; Mitov 2000) and mites (Flogaitis 1992).

Michaelsen (1902, 1914, 1928) and Cognetti (1906, 1913) were among the early scientists who studied the earthworm fauna of Greece. Their work was continued by Černosvitov (1934, 1938) Tzelepis (1943) and Omodeo (1955), and later Karaman (1972), Šapkarev (1972), Michalis (1975a, 1975b, 1976, 1977) and Zicsi (1973, 1974) presented new data on the earthworm fauna of Greece.

A complete summary on the earthworms of Greece was published by Zicsi & Michalis (1981), critically reviewing the previously published data and documenting the presence of altogether 43 species. After this comprehensive work, two new *Dendobaena* species were described and the presence of *Proctodrilus opisthoductus* Zicsi, 1985 was reported (Zicsi & Michalis 1993). Later, a further new species *Octodrilus peleensis* Michalis, 1995 was added to the earthworm fauna raising the number of lumbricid species recorded for Greece to 47.

In the last decade, researchers of the Hungarian Natural History Museum organized several expeditions to the Balkan Peninsula (Murányi *et al.* 2011), including Greece, to collect water insects, molluscs and different groups of

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