



## Checklist of the earthworm fauna of Croatia (Oligochaeta: Lumbricidae)

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### Abstract

A checklist of the Croatian earthworm fauna (Oligochaeta: Lumbricidae) is presented, including published records and authors' personal data. This is the first checklist for Croatia only, with comprehensive information for each earthworm species regarding ecological category, habitat, distribution type and distribution in Croatia. The currently known earthworm fauna of Croatia comprises 68 species belonging to 17 genera, with *Octodrilus* being the species-richest genus (15 species). Chorologically these species can be allocated to 13 different types of distribution. Nineteen species are endemic of which 10 species are endemic to Croatia and 9 species are endemic to Croatia and neighbouring countries (Italy, Slovenia, Hungary, and Montenegro). The endemic earthworms are distributed in the areas of higher altitudes in the Continental and Alpine biogeographic region, mostly covered with forest or autochthonous vegetation.

**Key words:** Annelida, Clitellata, distribution, biogeography, Balkans

### Introduction

The territory of the Balkan Peninsula together with the adjacent areas is one of the most thoroughly researched regions of Europe as far as the lumbricid fauna is concerned (Mršić 1991, Csuzdi *et al.* 2011). Conducted research pointed out that this geographic region, which includes Croatia, represents one of the earthworm biodiversity hotspots in Europe (Csuzdi *et al.* 2011). The reason of such diversity is attributed to the heterogeneity of climatic and edaphic factors, as well as the paleogeographic history. Although research on earthworms in Croatia began in the early 20th century (Rosa 1895; Michaelsen 1900, 1908; Cognetti 1906; Szüts 1919), the most comprehensive work was carried out by Mršić. Mršić has compiled all available literature data from various authors and added his own results in an extensive monograph on earthworms of the Balkans (Mršić 1991). He established a total of 166 lumbricid species and subspecies for the territory of former Yugoslavia, including 64 species and subspecies for Croatia. The present catalogue includes 68 earthworm species and is the first checklist of earthworms exclusively for Croatia. The difference in the number of species between Mršić's work and the present checklist is a result of several issues. Firstly, the collection activities in the past were not equally distributed and parts of Croatia were not sampled; therefore it was reasonable to expect new species. This was confirmed with our own work and in the recent paper of Szederjesi (2013). New earthworm species for the fauna of Croatia listed in Szederjesi's (2013) paper are *Aporrectodea sineporis* (Omodeo, 1952), *Eisenia spelaea* (Rosa, 1901), and *Dendrobaena cognettii* (Michaelsen, 1903). While, based on our own hitherto unpublished data, *Aporrectodea dubiosa* (Örley, 1881), *Eisenia andrei* Bouché, 1972, *Dendrobaena ganglbaueri* (Rosa, 1894) and *Octodrilus pseudotranspadanus* (Zicsi, 1971) are new for Croatia. Secondly, in this work we have updated the lumbricid nomenclature according to Csuzdi (2012), who discards some of the subspecies listed by Mršić and treats them as parthenogenetic forms (*Dendrodrilus rubidus tenuis* (Savigny, 1826), *Eiseniella tetraedra pupa* (Savigny, 1826) and *Eiseniella tetraedra intermedia* (Savigny, 1826)). And finally, even though Mršić has annotated in which of the republics of former Yugoslavia the species were recorded, some species were erroneously ascribed to the Croatian fauna without any recorded locations (*Eisenia spelaea* and *Aporrectodea dubiosa*).

The present checklist integrates published data related to the Croatian territory and authors' personal records