

Earthworm (Annelida: Lumbricidae) records from Pernik region

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Abstract

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The paper provides the first exploration of earthworm populations from region of Pernik (Bulgaria). During the investigation were registered ten earthworm species from the studied area: *Allolobophora chlorotica* (Savigny, 1826), *Aporrectodea caliginosa* (Savigny, 1826), *Aporrectodea rosea* (Savigny, 1826), *Aporrectodea trapezoides* (Dugès, 1828), *Aporrectodea jassyensis* (Michaelsen, 1891), *Cernosvitovia rebeli* (Rosa, 1897), *Lumbricus terrestris* Linnaeus, 1758, *Lumbricus rubellus* Hoffmeister, 1843, *Octodrilus transpadanus* (Rosa, 1884) and *Octolasion lacteum* (Örley, 1881).

Keywords: earthworms; soil reclamation; coal mining

Introduction

Pernik is the second largest town in western Bulgaria. The town is located in the Pernik Valley. It is part of region of Graovo, at an altitude between 700 and 850 m, length of 22 km and is surrounded by mountains Vitosha, Lyulin and Golo Bardo. The open cast coal mining is inevitably accompanied by a significant interference with the environment. This requires a due restoration of the disrupted balance and the forming of a new environment components.

This part of Western Bulgaria was not investigated for earthworm biodiversity yet. The first study of earthworm fauna in western parts of country was published by (Plisko, 1963), from Lulin Mountain. Since then her work was continued by Šapkarev (1986), with records from Dragoman, and Kiustendil. Recently Valchovski (2017) added new records of lumbricid biodiversity from Ruy Mountain, Breznik plain and Radomir.

Materials and Methods

The field investigations were carried out during the autumn of 2021. Earthworms were collected with digging and hand-sorting. All the specimens were killed in 96% ethanol, fixed in 4% formalin solution and in 96% ethanol, then transferred into 75% ethanol. The material is deposited in the Institute of Soil Science, Agrotechnologies and Plant Protection “N. Poushkarov”, Sofia, Bulgaria, in the personal collection of Hristo Valchovski (PCHV). Identification of species was done in accordance to Mršić (1991).

Results and Discussion

Family Lumbricidae Rafinesque-Schmaltz, 1815

Allolobophora chlorotica (Savigny, 1826)

Material examined: PCHV81, one specimen, meadow near Pernik park “Voinikovets”, altitude 760 m, 42°36'41"N 23°01'17"E, 12.10.2021.

Aporrectodea rosea (Savigny, 1826)

Material examined: PCHV82, four specimens, mixed forest near Maxim dump, altitude 746 m, 42°37'13"N, 23°02'08"E, 12.10.2021. PCHV 83, two specimens in cultivated land near Kalkas, southern from the town of Pernik, altitude 830 m, 42°34'55" N 23°04'11" E, 12.10.2021.

Aporrectodea trapezoides (Dugès, 1828)

Material examined: PCHV84, three specimens, next to Radina chesma neighbourhood, altitude 856 m, 42°34'18"N, 23°04'15"E, 12.10.2021.

Aporrectodea caliginosa (Savigny, 1826)

Material examined: PCHV81, six specimens, meadow near Pernik park "Voinikovets", altitude 760 m, 42°36'41"N 23°01'17"E, 12.10.2021. PCHV82 four specimens, mixed forest near Maxim dump, altitude 746 m, 42°37'13"N, 23°02'08"E, 12.10.2021.

Aporrectodea jassyensis (Michaelsen, 1891)

Material examined: PCHV 85, two specimens, cultivated land northern from the city of Pernik (Radina chesma neighbourhood), altitude 712 m, 42°37'49" N, 23°01'26" E, 12.10.2021.

Cernosvitovia rebeli (Rosa, 1897)

Material examined: PCHV 84, one specimens, Radina chesma neighbourhood, altitude 856 m, 42°34'18"N, 23°04'15"E, 12.10.2021.

Lumbricus rubellus Hoffmeister, 1843

Material examined: PCHV 85, two specimens, cultivated land northern from the city of Pernik, altitude 712 m, 42°37'49"N, 23°01'26"E, 12.10.2021.

Lumbricus terrestris Linnaeus, 1758

Material examined: PCHV 81 two specimens, meadow near Pernik park "Voinikovets", altitude 760 m, 42°36'41"N 23°01'17"E, 12.10.2021. PCHV 83, one specimen in cultivated land near Kalkas, southern from the town of Pernik, altitude 830 m, 42°34'55" N 23°04'11" E, 12.10.2021.

Octodrilus transpadanus (Rosa, 1884)

Material examined: PCHV 85, eight specimens, lake near cultivated land in Radina chesma neighbourhood, altitude 712 m, 42°37'49"N, 23°01'26"E, 12.10.2021.

Octolasion lacteum (Örley, 1881)

Material examined: PCHV81, one specimen, meadow near Pernik park "Voinikovets", altitude 760 m, 42°36'41"N

23°01'17"E, 12.10.2021. PCHV 83, one specimen in cultivated land near Kalkas, southern from the town of Pernik, southern from town of Pernik, altitude 830 m, 42°34'55" N 23°04'11" E, 12.10.2021.

During the investigation of studied area ten earthworm species were collected altogether, belonging to six genera: *Allolobophora chlorotica* (Savigny, 1826), *Aporrectodea caliginosa* (Savigny, 1826), *Aporrectodea rosea* (Savigny, 1826), *Aporrectodea trapezoides* (Dugès, 1828), *Aporrectodea jassyensis* (Michaelsen, 1891), *Cernosvitovia rebeli* (Rosa, 1897), *Lumbricus terrestris* Linnaeus, 1758, *Lumbricus rubellus* Hoffmeister, 1843, *Octodrilus transpadanus* (Rosa, 1884) and *Octolasion lacteum* (Örley, 1881).

According to zoogeographical position, most of the recorded earthworm taxa in Pernik region belongs to peregrine species. Only one of them is endemic: *Cernosvitovia rebeli*, other is Palearctic: *Octodrilus transpadanus*. Also one taxon is Trans-Aegean: *Aporrectodea jassyensis*. The study revealed the western occurrence of endemic *Cernosvitovia rebeli* and rare species *Octodrilus transpadanus*. According to the current study and literature data, in Western Bulgaria are registered 16 earthworm species and subspecies, which take part with almost one third of earthworm diversity in Bulgaria (Valchovski, 2012).

Conclusions

The paper provides the first exploration of earthworm biodiversity from region of Pernik (Bulgaria). During the investigation were registered ten earthworm species from the studied area, belonging to seven genera.

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